

II. ALTERNATIVES CONSIDERED

A. ALTERNATIVES SELECTION PROCESS UNDERTAKEN

The *202L/US60 Traffic Interchange Final Alternatives Selection Report (ADOT 2000a)* was prepared to describe the development, evaluation, and recommendation of the 202L/US60 TI alternatives to be studied in detail for the project. The *202L/US60 Traffic Interchange Alternatives Selection Report Addendum – Service Interchanges (ADOT 2001a)* presents the development, evaluation, and recommendations for the associated service TIs to be studied in detail for the project. Service TIs are those TIs that connect local streets (i.e., Power Road) to the 202L or US60.

1. 202L/US60 Traffic Interchange

A number of alternative TI concepts were developed for the 202L/US60 TI based on the features required for the projected traffic volumes and anticipated travel patterns. Consideration was given to traffic operations and ramp geometric design requirements, local access, the related impacts on utility relocations, right-of-way acquisition, and environment.

TI configurations were evaluated to identify which alternatives would best meet the traffic operational LOS objectives and required geometric design requirements, and would provide varying degrees of local access at adjacent service TIs.

A three-tiered, multi-disciplinary screening process was used to evaluate and eliminate alternatives from further consideration. Public agencies involved in the alternatives development and evaluation process were ADOT, the City of Mesa, MAG, and FHWA. A public information meeting was held September 7, 2000, to solicit public input.

The consultant project team convened on September 8, 2000, to review the previously developed alternatives, and to complete a Tier 1 Alternatives Screening Evaluation. A multi-disciplinary team was selected to review and score each alternative to initially determine which alternatives would best meet the project objectives based solely on technical merits. The initial project objectives established for the Tier 1 screening were:

- *Traffic Operations:* The TI would need to operate at an acceptable LOS (LOS D or better) based on Design Year 2025 traffic volume projections. The TI concept should provide sufficient capacity to provide an acceptable LOS, allowing for minor variations in the design-year traffic volume projections caused by unanticipated development or changes in regional travel patterns.

- ▶ *TI Geometric Design:* The TI design would meet AASHTO and ADOT geometric design standards to optimize highway operational characteristics. AASHTO geometric design standards are mandatory for all elements. ADOT geometric design standards are desired, unless approval of a design deviation is obtained from the ADOT Roadway Group.
- ▶ *Ability to Provide Local Access:* The ability to provide access between the freeway system and local arterial streets is important to City of Mesa officials and residents. Local access is also important to emergency response times for incident management on the freeways and to residences and businesses. The number of local access points (Service Traffic Interchanges) should be maximized when technically, environmentally, and economically feasible, without negatively affecting the operational characteristics of US60 and 202L.
- ▶ *Drainage Impacts:* Project impacts on the existing local and regional drainage systems should be minimized. It was determined that drainage impacts associated with the 202L/US60 TI alternatives were similar. The similarity would not constitute a design flaw. Any impacts on the existing offsite and onsite drainage systems would require mitigation to ensure that adjacent properties, the existing roadway system, and the proposed roadway systems would not be negatively affected by the TI improvements.
- ▶ *Design and Environmental Flaws:* Design and/or environmental flaws should be avoided. Alternatives found to have such flaws would be automatically eliminated from further consideration. Examples of environmental consideration include air quality and hazardous materials.
- ▶ *Environmental Impact Comparative Analysis:* Project impacts on the environment and adjacent existing and planned development should be minimized. The environmental factors considered were noise, air quality, visual, community cohesion, and environmental justice.
- ▶ *Right-of-Way Impacts:* Impacts an alternative would have on residences, businesses or other adjacent land should be minimized when technically, environmentally, and economically feasible without negatively affecting the operational characteristics of US60 and 202L.
- ▶ *Preliminary Construction Cost:* The TI LOS and geometric design characteristics should be achieved in the most cost-effective manner possible to obtain the necessary funding to implement the new facility.
- ▶ *Plan Compatibility:* This item addressed the compatibility of the TI alternative with current local/regional planning. Factors included location of 202L and US60, and the ability of the alternative to operate satisfactorily within the context of local and regional planning goals.

- ▶ *Public and Political Acceptance:* This item addressed the ability of the 202L/US60 TI alternative to generate public and political support for implementation, as it is currently understood. Political influences can alter costs, schedule, and public acceptability.

The multi-disciplinary team then reviewed and scored each alternative. The cumulative score of each item for each alternative was determined by group discussion and consensus by the team.

Results of the Tier 1 screening were presented at the Tier 2 Alternatives Screening Meeting held September 29, 2000. The purpose of the Tier 2 Alternatives Screening Meeting was to:

- ▶ Obtain federal, state, and local agency input regarding the alternatives developed to date.
- ▶ Review the Tier 1 results.
- ▶ Determine which alternatives should be carried forward to the Design Concept Report (DCR)/EA stage of development.

The Agency Project Review Team (APRT) included representatives from ADOT, FHWA, MAG, and the City of Mesa. After extensive discussion, the APRT placed greater emphasis on continuing to provide full access at the US60 local service TIs. Therefore, results of the Tier 2 Meeting included more alternatives that preserve full access at these local TIs. The APRT also made recommendations on which alternatives should be eliminated from further consideration and which should be studied in detail in the DCR and EA.

The Tier 3 Agency Monthly Coordination Meeting was held October 19, 2000. The purpose of the Tier 3 Agency Coordination Meeting was to review the recommendations of the Tier 2 APRT recommendations and to finalize federal, state, and local agency input regarding which alternatives should be carried forward for detailed study in the DCR and EA. The final recommendations are presented below in the section titled, *Alternatives Considered but Eliminated from Further Consideration*, and in the section titled, *Screening Process Recommendations for Alternatives to be Studied in Detail*.

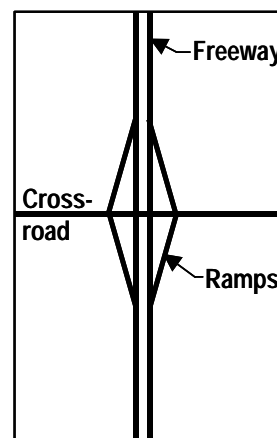
2. Service Traffic Interchanges

Once the 202L/US60 TI alternatives to be studied in detail were identified, initial concepts were developed for each of the existing and planned service TIs within the study area. These service TIs are:

- | | |
|--------------------------|--------------------------|
| ▶ US60/Sossaman Road TI | ▶ 202L/Baseline Road TI |
| ▶ US60/Ellsworth Road TI | ▶ 202L/Guadalupe Road TI |
| ▶ 202L/Broadway Road TI | ▶ 202L/Elliot Road TI |

Local access was reviewed that considered a variety of different alternative configurations that would provide partial or full access where it exists today.

Each service TI concept was developed using a diamond TI configuration with dual left-turn lanes in each applicable direction of travel on the crossroads to ensure the EA covers the maximum impact area potentially required for each TI. Dual left-turn lanes are not warranted at all service TIs based on the traffic analysis results using Design Year 2025 traffic volume projections. The locations of dual left-turn lanes and right-turn lanes will be determined through on-going discussions between ADOT and the City of Mesa.



Example Diamond TI

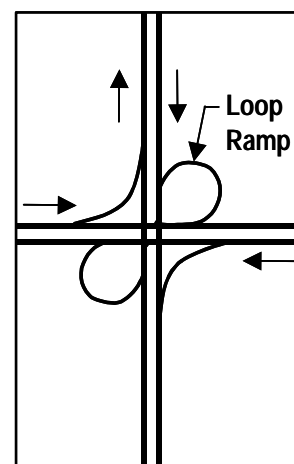
B. ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER CONSIDERATION

1. 202L/US60 Traffic Interchanges

Using criteria developed to meet project objectives, 18 alternatives were developed for the 202L/US60 TI. Detailed descriptions of these alternatives and the reasons why all but four of the alternatives were eliminated from further consideration are presented in the *202L/US60 Traffic Interchange Final Alternatives Selection Report (ADOT 2000a)*. The numbering of the alternatives presented below matches the numbering of the alternatives used in the Alternatives Selection Report (ADOT 2000a). The following summarizes the information presented in that report. Appendix A of this document provides plan views of the 202L/US60 TIs considered but eliminated from further study. Alternatives with similar design features are grouped together for the purpose of this summary.

Loop Ramp Alternatives

Alternative No. 1 is the alternative selected in the FEIS (ADOT 1999a). The alternative used a 202L alignment approaching the 202L/US60 TI from the north that would not meet current design standards. The alternative included “loop” ramps for two of the four connections between the 202L and US60. Alternative 2 is similar to Alternative 1 but used a 202L alignment approaching the 202L/US60 TI from the north that would meet current design standards. In addition, the single lane “loop” ramps used in Alternative 1 were revised to increase the radius to provide a higher design speed.



Example Loop Ramps

The results of the traffic analysis for the Design Year 2025 traffic volume projections indicated that elements of Alternatives 1 and 2 would result in severe traffic congestion. Specifically, severe traffic congestion would occur when traffic would have to substantially reduce travel speed to negotiate the loop ramps, and would be in conflict with traffic passing through the 202L/US60 TI operating at higher vehicle speeds in the adjacent travel lane.

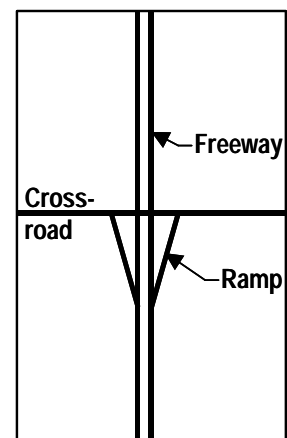
Both alternatives were eliminated from further consideration as “Action” alternatives because of flaws associated with the 202L/US60 TI operational characteristics and geometric design. However, because Alternative 1 was included in the 1999 FEIS (**ADOT 1999a**) as the selected alternative, Alternative 1 would serve as the “No-Build” Alternative for baseline environmental analysis. In the FEIS (**ADOT 1999a**), the TI eastern and western termini were approximately 0.5 miles east of Ellsworth Road and 0.5 miles west of the Hawes Road alignment. For this study, the eastern and western limits were extended to Crismon and Power Roads respectively to account for the future provision of HOV lanes on US60.

Freeway System Optimization Alternatives

Alternatives 3 through 8 were developed to optimize the operation of the 202L/US60 TI. To do so, local access to US60 in the vicinity of the 202L/US60 TI was reduced. Specifically, for Alternatives 3 through 8, the US60/Sossaman Road and US60/Ellsworth Road TIs were designed as half-diamond TIs (currently, full access to and from US60 is provided at these TIs). This was done to reduce congestion and traffic conflicts between the US60/Sossaman Road and US60/Ellsworth Road TIs, and mainline traffic on US60.

Design differences among these alternatives were slight and associated with ramp connection design between the 202L and US60. Slight adjustments were made in ramp design from one alternative to the next in order to optimize traffic operations on US60 and the 202L. As design progressed from Alternative 3 to Alternative 8, additional lanes were added to some of the ramps to improve ramp capacity. The distance to allow traffic to enter and exit the 202L and US60 was lengthened to enhance traffic operations on the 202L and US60. These differences also created differences in preliminary cost estimates.

With the exception of Alternative 7, these alternatives were eliminated from further consideration. The following is a summary of reasons for eliminating these alternatives. Each reason does not necessarily apply to all alternatives.



***Example
Half-Diamond TI***

- ▶ Some 202L/US60 TI ramps were designed as single lane ramps, which would not operate as well as dual lane ramps proposed for some other alternatives.
- ▶ Some entrance ramps from the service TIs would require traffic to make two lane changes within one mile to merge into the mainline basic lanes, which is an undesirable operating condition.
- ▶ Some freeway-to-freeway movements (as with the westbound US60 traffic turning north on the 202L for Alternative 3) would be required to make three lane changes to merge into the mainline 202L basic lanes, which is an undesirable operating condition.
- ▶ Reduced US60 access at Sossaman and Ellsworth Roads could redistribute traffic to the US60/Power Road and US60/Crismon Road TIs, which could exceed the capacity for these TIs.
- ▶ In some instances, less land area would be available for a planned retention basin adjacent to the northeast quadrant of the TI when compared to some other alternatives.
- ▶ Greater right-of-way requirements would lead to undesirable environmental and community impacts when compared to some other alternatives.

Enhanced Local Access Alternatives

Using a 202L/US60 design that would optimize traffic operations on 202L and US60, Alternatives 9 through 18 introduced varying design features to enhance local access at the US60/Sossaman Road, US60/Ellsworth Road, 202L/Baseline Road and/or 202L/Southern Avenue TIs. The local access affects overall operational characteristics of the 202L/US60 TI. Table 2-1 summarizes the differences in how local access is provided at these service TIs.

Except for Alternatives 16 and 18, these alternatives were eliminated from further consideration. The following is a summary of reasons for eliminating these alternatives and each reason does not necessarily apply to all alternatives.

- ▶ Some freeway-to-freeway ramps were designed as single lane ramps, which would not operate as well as the dual lane ramps proposed for some other alternatives.
- ▶ Alternatives with collector-distributor roads adjacent to US60 would redistribute the US60/Ellsworth Road TI traffic to the US60/Sossaman Road TI, resulting in traffic demand that would exceed the capacity of the US60/Sossaman Road TI.

Table 2-1. Local Access Alternatives

Alternative	Interchange Type			
	US60/Sossaman Road	US60/Ellsworth Road	202L/Baseline Road	202L/Southern Avenue
9	Half Diamond	Full Diamond	Half Diamond	None
10	Full Diamond	Full Diamond	Half Diamond	None
11	Half Diamond	Half Diamond	Half Diamond	Half Diamond
12	Half Diamond	Half Diamond	Half Diamond	Half Diamond ¹
13	Full Diamond	Full Diamond	Half Diamond	None
14	Partial Cloverleaf	Partial Cloverleaf	Half Diamond	None
15	Partial Cloverleaf	Partial Cloverleaf	None	None
16	Half Diamond	Full Braided	Half Diamond	None
17	Full Braided ²	Full Braided ²	Half Diamond	None
18	Full Diamond ³	Full Braided	Half Diamond	None
¹ Includes frontage roads north from Southern Avenue to Broadway Road.				
² Figure 2-4 illustrates braided ramp configurations at the US60/Sossaman Road and US60/Ellsworth Road TIs.				
³ Eastbound US60 on-ramp is replaced with a collector-distributor road connecting to US60/Ellsworth Road TI.				

- For some alternatives, greater right-of-way requirements would lead to undesirable impacts on surrounding communities and added project costs without substantial benefit to the operational characteristics of the project.
- There would be added project costs without substantial benefit to the operational characteristics of the project.
- For some alternatives, the full-diamond TI design at the Sossaman Road TI would cause the US60 mainline operational characteristics to degrade to unacceptable traffic operations.
- For some alternatives, use of a partial cloverleaf design for service TIs would be inconsistent with “driver expectancy”, since this type of configuration is not provided elsewhere on the Regional Freeway System.
- In some instances, the US60 drainage channel and associated retention basins would be substantially and undesirably altered in the vicinity of Sossaman Road.

- ▶ In one instance, the elimination of freeway access at Baseline Road would create an undesirable operating condition by redistributing additional traffic on the south ramps at Guadalupe Road.

2. Service Traffic Interchanges

During the screening process, it was found that the service TI configurations, as previously described, would result in negligible impacts on the surrounding communities and developments. Consequently, consideration of other service TI concepts was not warranted.

3. Other Alternatives Eliminated from Further Consideration

202L/US60 TI at Other Locations

In the FEIS (ADOT 1999a), several 202L alignment alternatives were examined that would have placed the 202L/US60 TI at locations other than the location described in this EA. In August 1999, the FHWA signed the ROD for the selected 202L alignment from SR 87 to US60. That action confirmed the selected alignment and location of the 202L/US60 TI as described in this document.

Depressed 202L Freeway at the 202L/US60 TI

A technical review was conducted to determine the feasibility of depressing the 202L below Southern Avenue, US60, and Baseline Road. This option was eliminated from further detailed study because:

- ▶ Approximately 5 million cubic yards (cy) of excavated materials would need to be exported from the project site, which would increase the excavation costs and lengthen the project construction period.
- ▶ A substantial reconstruction of the existing regional drainage system in the study area would require a \$3 million to \$5 million pump station (not needed with other alternatives), and introduce added annual maintenance costs in the range of \$50,000 to \$100,000.
- ▶ Substantial alterations to existing public utilities in the study area would be required.
- ▶ An additional \$35 million would be added to the total construction cost of the project.
- ▶ Local traffic would be substantially disrupted during a lengthened construction period.

C. SCREENING PROCESS FINAL RECOMMENDATIONS FOR ALTERNATIVES TO BE STUDIED IN DETAIL

1. 202L/US60 TI Final Recommendations

No-Build Alternative

Alternative 1 was eliminated from further consideration as an Action Alternative because of flaws associated with the 202L/US60 TI operational characteristics and geometric design. However, because Alternative 1 was included in the 1999 FEIS (**ADOT 1999b**) as the selected alternative, Alternative 1 would serve as the No-Build Alternative for baseline environmental analysis.

Action Alternatives

Alternative 7 would include all of the freeway lanes and directional ramp lanes necessary to provide for the anticipated traffic demand. “Exit-exit” and “entrance-entrance” directional ramp connections to 202L and US60 would be provided to alleviate operational concerns associated with many of the other alternatives. The “exit-exit” and “entrance-entrance” design for all directional ramp connections between 202L and US60 is preferable because the design would allow traffic on each ramp to exit and enter the 202L and US60 with a separate ramp connection. This design would provide additional weaving length between the 202L/US60 TI ramps and the adjacent service TI ramps to provide better operating conditions for the traveling public. Because of the close proximity of Sossaman and Ellsworth Roads to the 202L/US60 TI, the US60/Sossaman Road and US60/Ellsworth Road TIs were configured as half-diamond TIs.

Alternative 16 would include all of the freeway lanes and directional ramp lanes necessary to accommodate the anticipated traffic demand. “Entrance-entrance” directional ramp connections would be provided in the southwest and northeast quadrants of the 202L/US60 TI to alleviate operational concerns that occur when entrance ramps are combined. The braided ramps for the Ellsworth Road TI would provide full US60 freeway access at Ellsworth Road.

Alternative 18 would provide full directional access to US60 for Sossaman and Ellsworth Roads. It would include all of the freeway lanes and directional ramp lanes necessary to accommodate the anticipated traffic demand. “Entrance-entrance” directional ramp connections would be provided in the southwest and northeast quadrants of the TI to alleviate operational concerns associated with combined entrance ramp connections.

Alternatives 7, 16, and 18 have been designed to allow for future construction of HOV ramps for:

- ▶ Westbound traffic on US60 to southbound traffic on 202L.
- ▶ Northbound traffic on 202L to eastbound traffic on US60.

For these alternatives, the US60 and 202L mainline approaches to the 202L/US60 TI were designed to:

- ▶ Optimize the roadway geometric design.
- ▶ Provide efficient traffic operational characteristics at the directional ramp connections.
- ▶ Provide for the ultimate roadway section on each freeway.

2. Service TI Final Recommendations

The service TIs recommended for further detailed study in conjunction with the 202L/US60 TI alternatives are shown in Table 2-2. Plan views of these service TIs can be found in Appendix B. The TI configurations for the action alternatives were developed to:

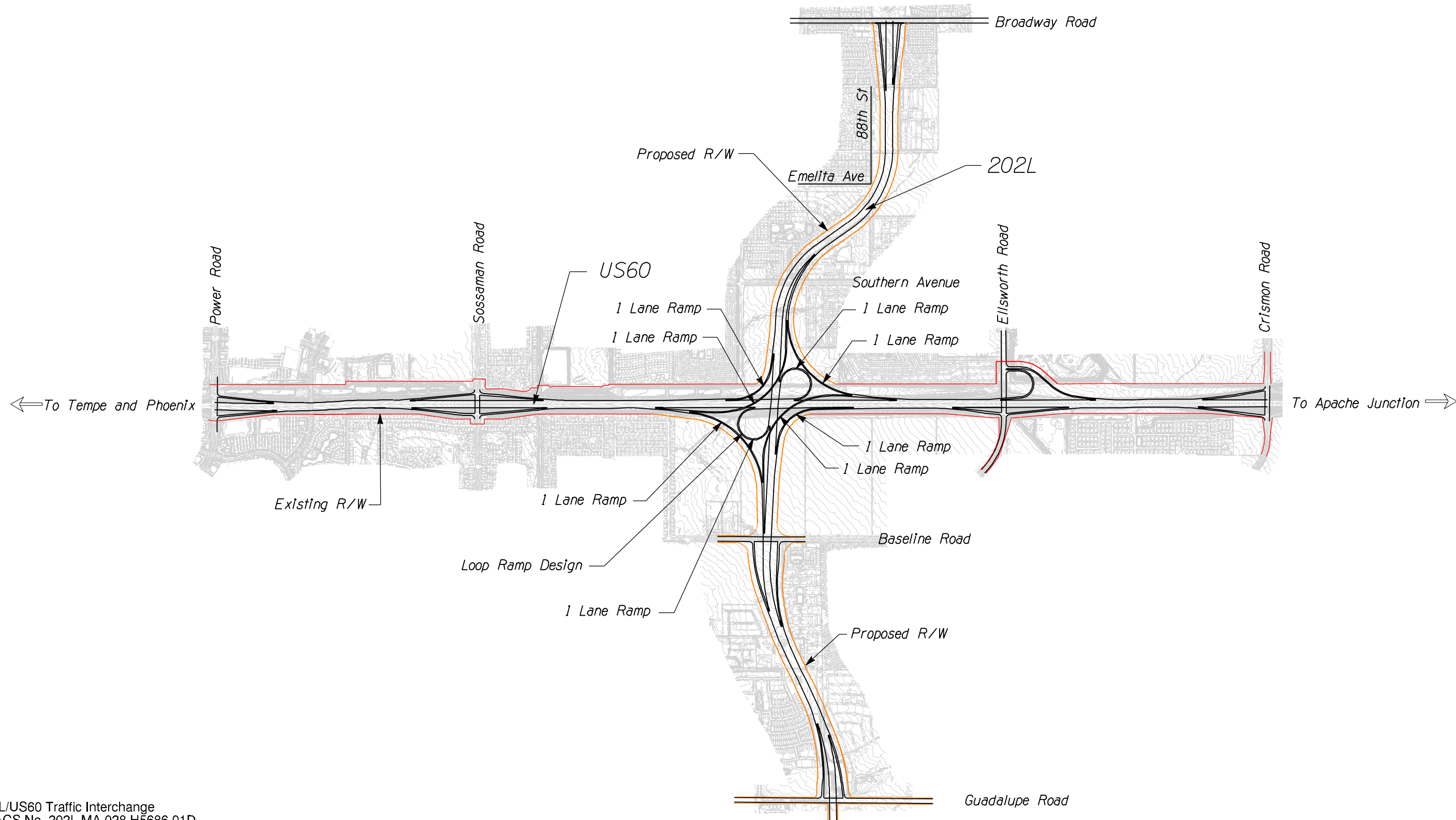
- ▶ Meet the traffic operational LOS objectives.
- ▶ Meet required geometric design requirements.
- ▶ Minimize right-of-way acquisition.
- ▶ Be used within the Regional Freeway System.
- ▶ Be understood by the traveling public.
- ▶ Minimize impacts on existing utilities.
- ▶ Minimize environmental impacts.
- ▶ Minimize the required construction costs.

3. Renaming the Project Alternatives to be Studied in Detail

To simplify the names of the alternatives and to reduce possible confusion associated with referencing the alternatives, the alternatives to be studied in detail were renamed as presented in Table 2-2. The final recommendations for the service TIs have been incorporated into the renaming of alternatives. Figures 2-1, 2-2, 2-3, and 2-4 are plan views of the four alternatives to be studied in detail.

Table 2-2. Alternatives Renamed

Initial 202L/US60 TI Alternative Name	Related Service TI Configurations	Alternative Renamed To
Alternative 1	Sossaman Road – Full Diamond	No-Build Alternative
	Ellsworth Road – Partial Cloverleaf	
	Broadway Road – Full Diamond ¹	
	Baseline Road – Half Diamond	
	Guadalupe Road – Full Diamond	
	Elliot Road – Full Diamond	
Alternative 7	Sossaman Road – Half Diamond	Alternative A
	Ellsworth Road – Half Diamond	
	Broadway Road – Full Diamond	
	Baseline Road – Half Diamond	
	Guadalupe Road – Full Diamond	
	Elliot Road – Full Diamond	
Alternative 16	Sossaman Road – Half Diamond	Alternative B
	Ellsworth Road – Full Diamond	
	Broadway Road – Full Diamond	
	Baseline Road – Half Diamond	
	Guadalupe Road – Full Diamond	
	Elliot Road – Full Diamond	
Alternative 18	Sossaman Road – Full Diamond ²	Alternative C
	Ellsworth Road – Full Diamond	
	Broadway Road – Full Diamond	
	Baseline Road – Half Diamond	
	Guadalupe Road – Full Diamond	
	Elliot Road – Full Diamond	
¹ The TI includes frontage roads on both sides of the 202L extending north to University Drive. The frontage roads would not be constructed as part of the project.		
² The TI includes an eastbound collector-distributor road connecting to the 202:/Ellsworth Road TI instead of an eastbound ramp directly onto US60.		



202L/US60 Traffic Interchange
TRACS No. 202L MA 028 H5686 01D
Project No. NH-202-B(ACG)

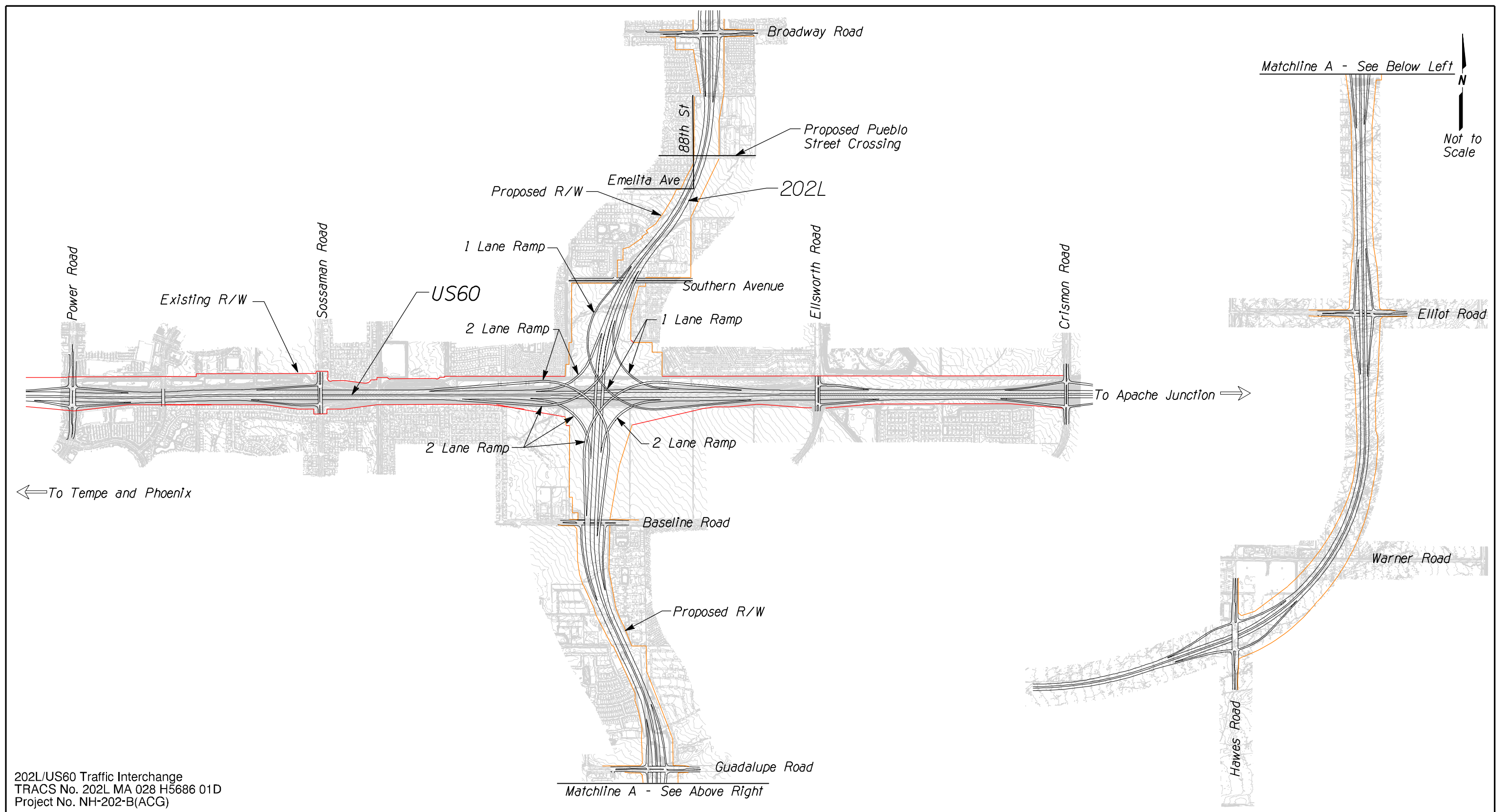
Notes

- R/W - Right of Way.
- All 202L ramps are single-lane ramps.
- Table 2-2 describes service traffic interchange configurations.
- Proposed R/W location approximate.
- US60/Sossaman Road TI utilizes a diamond TI configuration.

**Plan View, No Build
Alternative**

Figure 2-1

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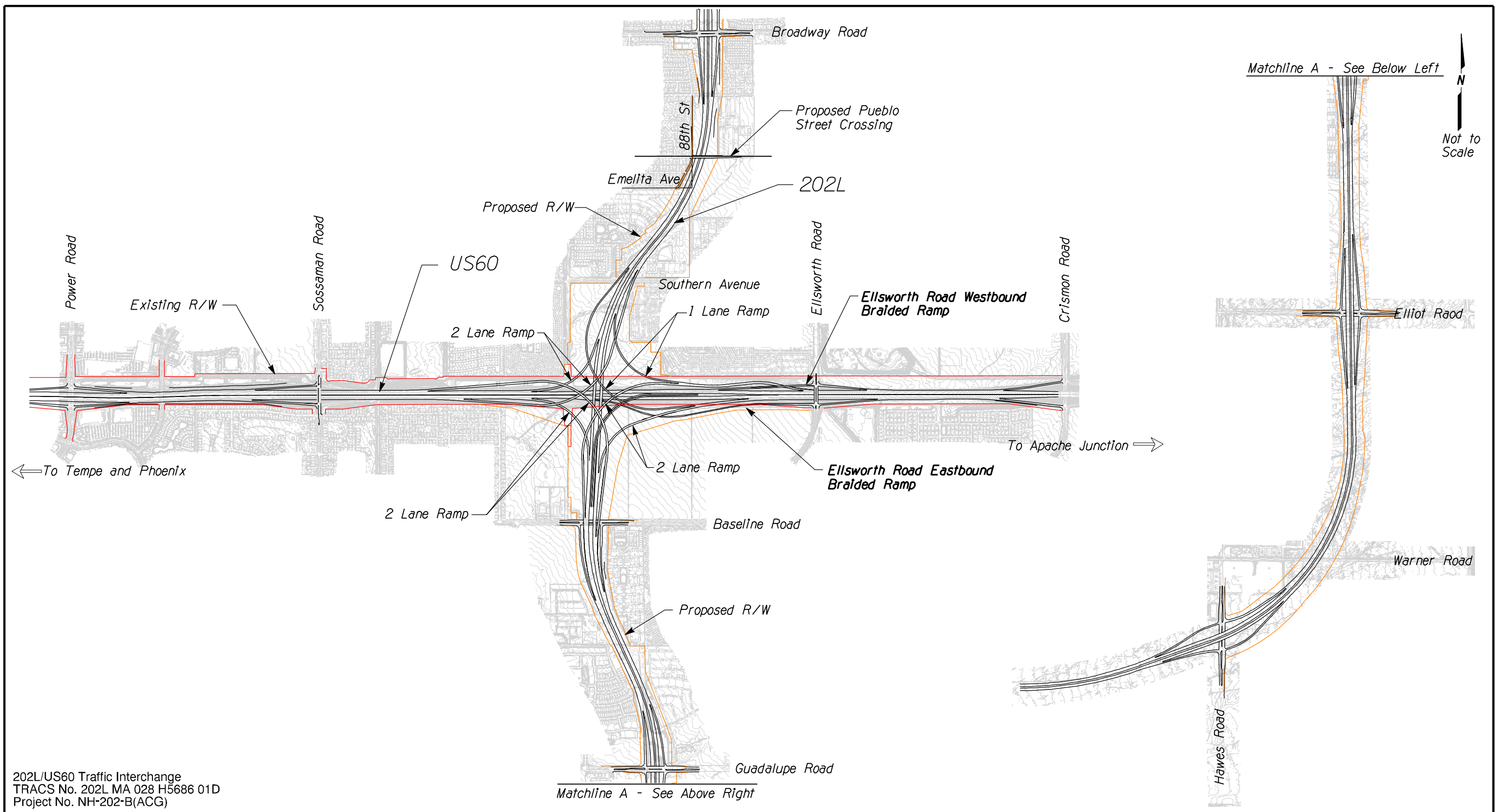
Notes

- RW – Right of Way.
- See Figure 2-5 for lane diagram of this alternative.
- Table 2-2 describes service traffic interchange configurations.
- The 202L would be constructed as an overpass over Warner Road.
- US60/Sossaman Road and US60/Ellsworth Road TIs utilize half-diamond TI configurations.

Plan View Alternative A

Figure 2-2

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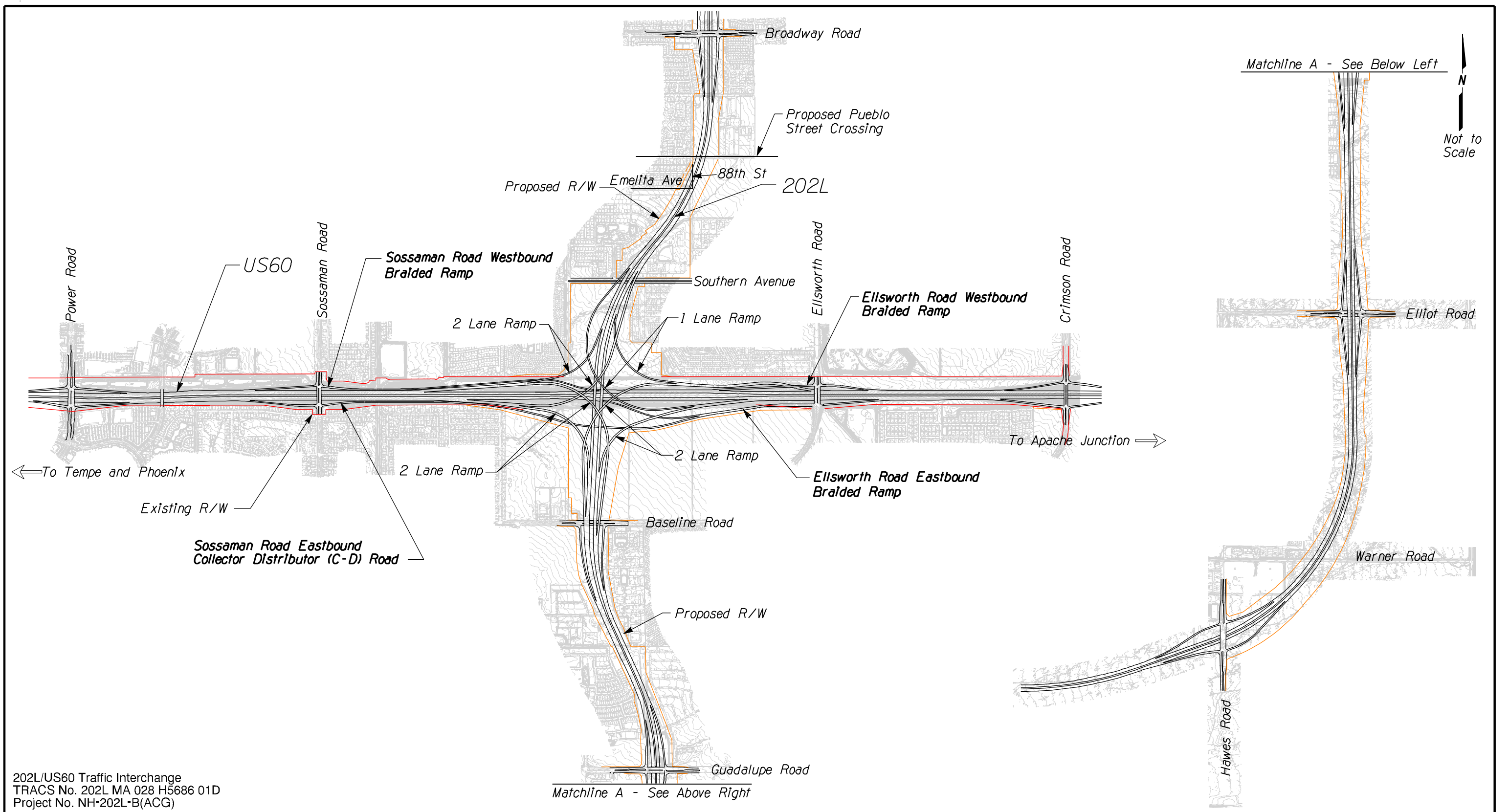
Notes

- R/W - Right of Way.
- See Figure 2-6 for lane diagram of this alternative.
- Table 2-2 describes service traffic interchange configurations.
- The 202L would be constructed as an overpass over Warner Road.

Plan View, Alternative B

Figure 2-3

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Notes

- RW – Right of Way.
- See Figure 2-7 for lane diagram of this alternative.
- Table 2-2 describes service traffic interchange configurations.
- The 202L would be constructed as an overpass over Warner Road.

Plan View, Alternative C

Figure 2-4

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D. SUMMARY OF MAJOR DIFFERENCES OF ALTERNATIVES A, B, AND C

The major differences among the three action alternatives relate to: freeway system operations, local access, right-of-way impacts, and project cost. In order to enhance local access, 202L and US60 operations performance is reduced, right-of-way impacts increase, and project costs increase. Conversely, in order to improve freeway system operations, local access is reduced, right-of-way impacts are reduced, and project costs are reduced. Table 2-3 ranks the differences among the action alternatives from 1 to 3, with 1 reflecting the best and the 3 reflecting the worst performing alternative in a given category. The relative importance of the listed criteria is not ranked.

Table 2-3. Ranking of Major Differences of Alternatives A, B, and C

Action Alternative	Enhances Freeway System Operations	Enhances Local Access	Reduces Right-of-Way Impacts	Reduces Preliminary Project Cost
A	1	3	1	1
B	2	2	2	2
C	3	1	3	3

E. DESCRIPTION OF PROJECT ALTERNATIVES

1. No-Build Alternative

Design features, potential impacts, and associated mitigation measures for the No-Build Alternative have been adequately presented in the 1999 FEIS (**ADOT 1999a**) and are incorporated by reference into this document. Section III.0 of this document summarizes the impacts and mitigation of the No-Build Alternative for comparison with the action alternatives.

As shown in Figure 1-4, this alternative would not operate at an acceptable LOS in the Design Year 2025. The planned 202L alignment immediately north of the 202L/US60 TI does not meet current AASHTO and ADOT geometric design standards.

2. Action Alternatives

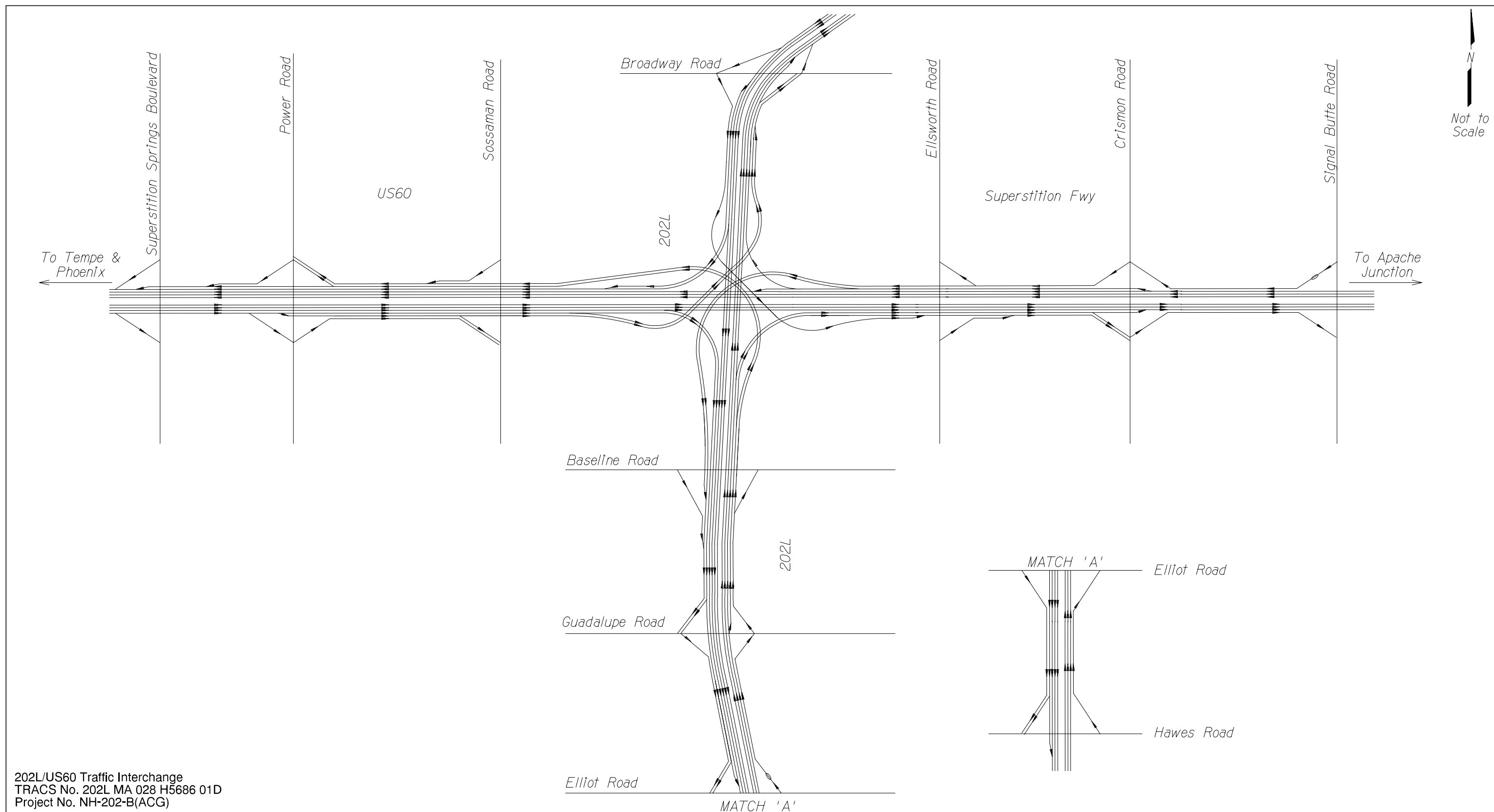
Lane Requirements

Table 2-4 shows the lane requirements for the 202L/US60 TI. Figures 2-5, 2-6, and 2-7 illustrate lane diagrams for Alternatives A, B, and C, respectively. Lane requirements for the service TIs are in Appendix B.

Table 2-4. Lane Requirements, All Action Alternatives

Freeway Feature	Action Alternatives		
	A	B	C
US60 Mainline	Three general purpose lanes ¹ and one future HOV ² lane in each direction; ultimately four general purpose lanes and an HOV lane in each direction		
202L Mainline	Three general purpose lanes ¹ and one future HOV lane ² in each direction		
US60 Westbound to 202L Southbound Ramp	Two-lane ramp		
US60 Eastbound to 202L Southbound Ramp	Two-lane ramp		
US60 Westbound to 202L Northbound Ramp	One-lane ramp		
US60 Eastbound to 202L Northbound Ramp	Two-lane ramp		
202L Southbound to US60 Eastbound Ramp	One-lane ramp		
202L Northbound to US60 Westbound Ramp	Two-lane ramp		
202L Southbound to US60 Westbound Ramp	Two-lane ramp		
202L Northbound to US60 Eastbound Ramp	Two-lane ramp		
¹ All lanes (general purpose and HOV) would be 12 feet in width.			
² The median would be reserved for the future addition of HOV lanes when warranted by future traffic volumes.			
Note: All ramps for the No-Build Alternative would be single-lane ramps. Lane requirements for the 202L and US60 mainlines would be the same as for the Action Alternatives.			

Alternative A would use an “exit-exit” and “entrance-entrance” design for all ramp connections between 202L and US60 to allow each ramp to exit and enter the 202L and US60 with a separate ramp connection. This design would provide additional weaving length between the 202L/US60 TI ramps and the adjacent service TI ramps to provide better operating conditions for the traveling public.



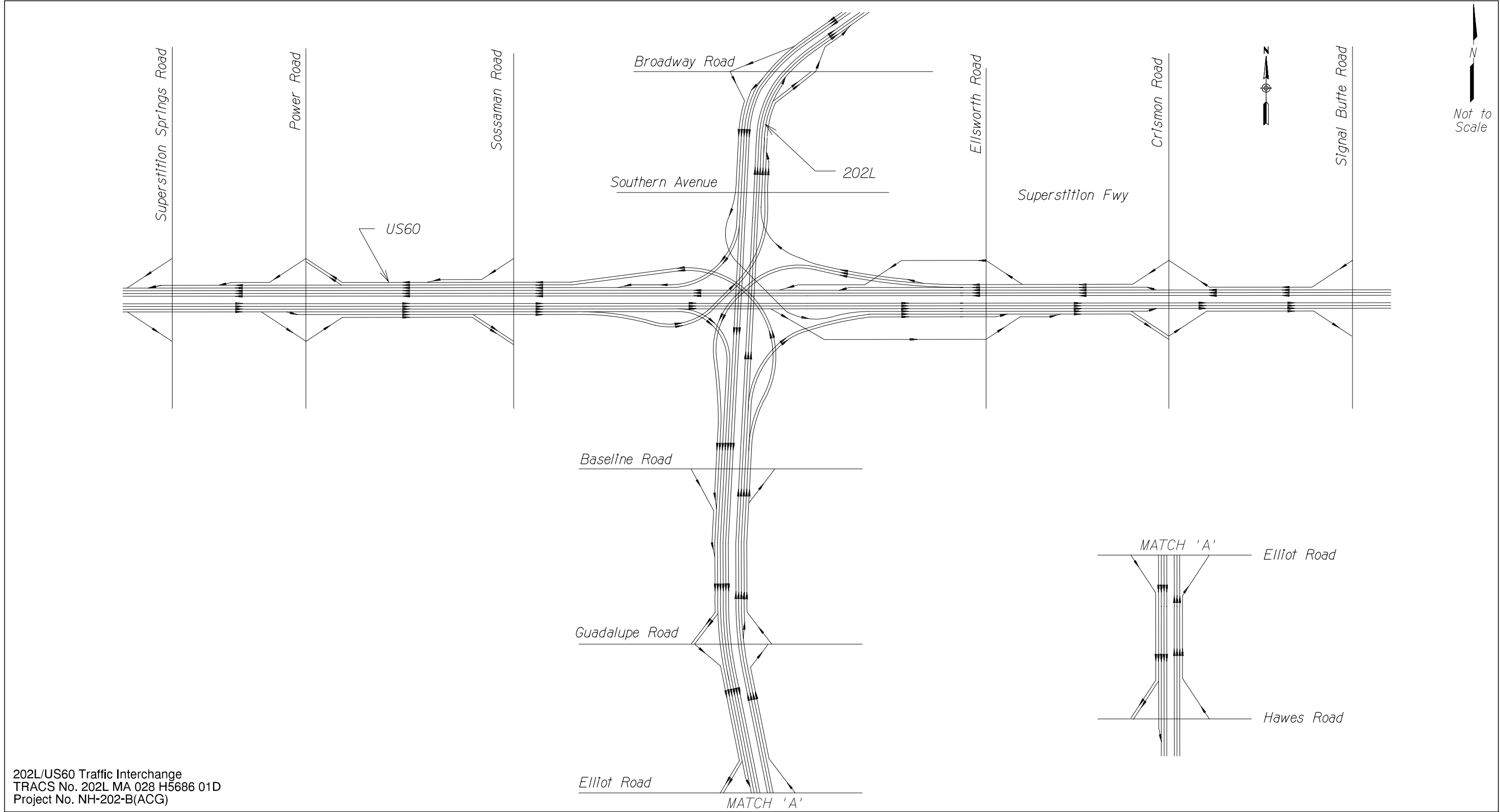
NOTES

- Each line depicts a single travel lane (except on crossroads, see Appendix B).
- Arrows indicate direction of traffic flow.
- Does not include HOV lanes.

Lane Diagram Alternative A

Figure 2-5

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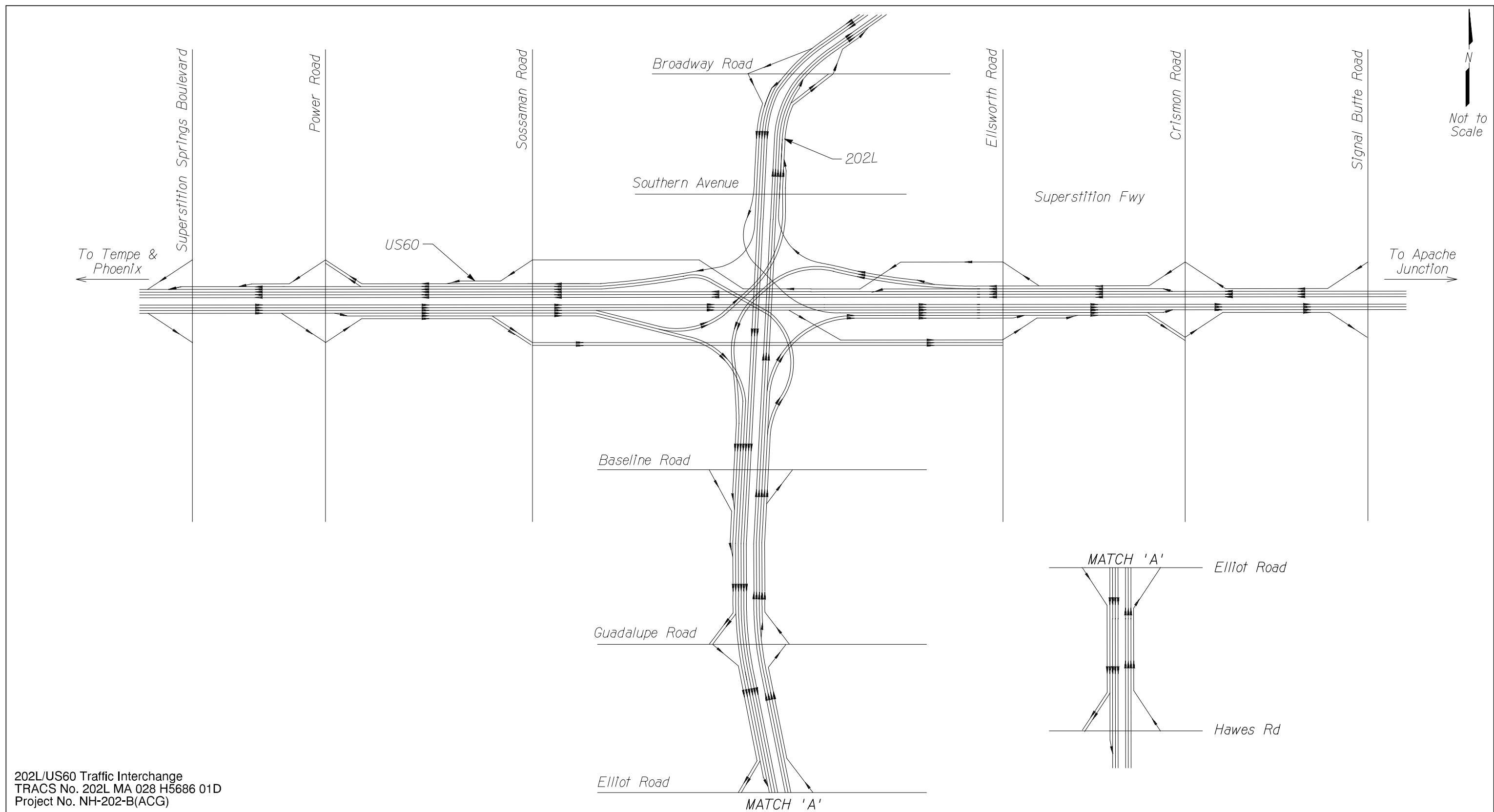
NOTES

- Each line depicts a single travel lane (except on crossroads, see Appendix B).
- Arrows indicate direction of traffic flow.

Lane Diagram Alternative B

Figure 2-6

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NOTES

- Each line depicts a single travel lane (except on crossroads, see Appendix B).
- Arrows indicate direction of traffic flow.
- Does not include HOV lanes.

Lane Diagram Alternative C

Figure 2-7

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Vehicles traveling eastbound on US60 and exiting onto the 202L to travel north or south would use a separated “exit-exit” and “entrance-entrance” design for Alternative B. For Alternative C, vehicles making that same traffic movement would use a combined exit ramp connection with US60 and “entrance-entrance” connection with the 202L.

For Alternatives B and C, the directional ramps located in the northeast quadrant of the interchange would implement a combined “entrance-entrance” connection with northbound 202L. The directional ramps located in the southeast quadrant of the interchange would implement an “exit-exit” connection with northbound 202L, and a combined entrance connection with eastbound US60.

In the northwest quadrant, Alternative B would use a separated “exit-exit” and “entrance-entrance” design for the exit ramp connections to southbound 202L and the entrance ramp connections to westbound US60. Alternative C would use an “exit-exit” connection with southbound 202L, and a combined entrance connection with westbound US60. Because of the braided Sossaman Road TI westbound US60 exit ramp, vehicles traveling southbound on the 202L, exiting to travel westbound onto US60, would be elevated over the Sossaman Road exit and would then merge with the northbound 202L traffic destined for westbound US60 into a single combined ramp connection with westbound US60.

Bridges/Service Traffic Interchanges

According to recent ADOT bridge inspection reports, all existing bridge structures provide adequate vertical clearance. The minimum vertical clearance occurs at the US60 median. Table 2-5 summarizes the existing bridge locations and posted minimum vertical clearances. All of the underpass structures have two spans of 118 feet with the exception of Clearview Avenue, which has spans of 132 feet and 122 feet for eastbound and westbound traffic, respectively.

Table 2-5. Existing Bridges

Location	Minimum Vertical Clearance
Power Road TI Underpass	16 feet-0 inches
Clearview Avenue Underpass	16 feet-8 inches
Sossaman Road TI Underpass	16 feet-9 inches
Ellsworth Road TI Underpass	16 feet-4 inches
Crismon Road TI Overpass	16 feet-4 inches
Source: 202L/US60 Traffic Interchange Final Alternatives Selection Report (ADOT 2000a).	

Several service TIs would be newly constructed or reconstructed for the action alternatives as shown in Table 2-6. Each service TI entrance ramp onto the 202L or US60 would be designed as a parallel entrance ramp, or transition into an auxiliary lane continuing to the “downstream” service TI exit ramp.

The US60/Power Road and US60/Crismon Road TIs remain as full-diamond TIs. The Clearview Avenue grade separation would not be affected by the US60 widening.

Table 2-6. Service Traffic Interchanges

Service TIs	202L/US60 TI Alternative		
	A	B	C
US60/Sossaman Road	Half Diamond		Full Diamond ¹
US60/Ellsworth Road	Half Diamond	Full Diamond ²	
202L/Broadway Road	Full Diamond ³		
202L/Baseline Road	Half Diamond		
202L/Guadalupe Road	Full Diamond		
202L/Elliot Road	Full Diamond		
¹ The US60/Sossaman Road TI would be configured as a full-diamond TI configuration. A braided ramp would be provided for the westbound exit ramp from US60. Eastbound US60 access would be provided by way of a collector-distributor road connection to the US60/Ellsworth Road TI.			
² The US60/Ellsworth Road TI is configured as a full-diamond interchange configuration with braided ramps to provide full access to US60.			
³ The 202L/Broadway Road TI configured as a full-diamond TI would include parallel frontage roads to connect with Main Street to the north.			
Note: Service TI configurations for the No-Build Alternative are presented in Table 2-2.			

Vertical Alignment

US60 is depressed from Power Road to Ellsworth Road, with four underpass structures carrying the crossroads over the freeway. East of Ellsworth Road, US60 transitions to an elevated freeway passing over Crismon Road. No changes are proposed to the existing US60 vertical alignment.

The 202L will be depressed from Broadway Road south to Pueblo Street, transition to an elevated freeway over Southern Avenue, US60, and Baseline Road, and then transition back to a depressed freeway at Guadalupe Road, and an elevated freeway at Elliot and Hawes Roads.

Design Criteria

The design criteria used to develop the action alternatives meet current ADOT and AASHTO standards as set forth in *A Policy on Geometric Design of Highways and Streets (AASHTO 1994)*, *ADOT's Standard Specifications for Road and Bridge Construction (ADOT 2000b)*, *Roadway Design Guidelines (ADOT 2000c)*, and *Arizona Bicycle Facilities Planning and Design Guidelines (ADOT 1998)*. Deviation from design standards is not anticipated for any of the action alternatives.

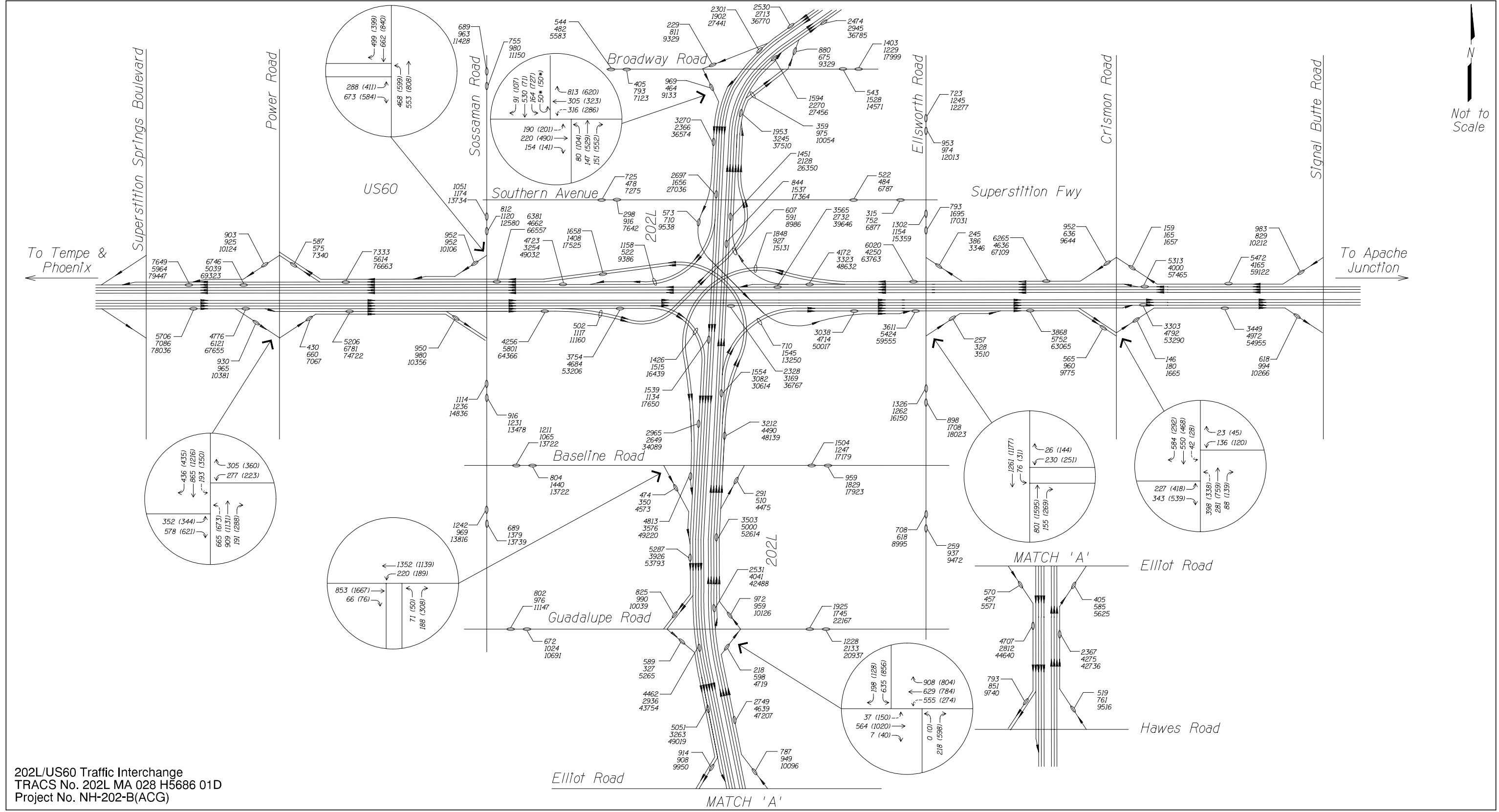
The project would be readily accessible to and usable by individuals with disabilities and would comply with the applicable provisions set forth in the Americans with Disabilities Act (ADA) to the maximum extent feasible. For example, the reconstruction of curb ramps and sidewalks, and construction of new curb ramps and sidewalks at project TIs would occur to satisfy ADA requirements.

System Interchange Traffic Operations

Figures 2-8 through 2-13 show the Design Year 2025 projected traffic volumes and the predicted LOS for each of the action alternatives. Generally, all action alternatives are predicted to operate at LOS D or better. All traffic movements for Alternative A would operate with LOS C or better, except where the 202L/US60 TI improvements would match the existing or planned US60 roadways at the western and eastern limits of the study area. All traffic movements for Alternatives B and C would operate with LOS D or better, except where the 202L/US60 TI improvements would match the existing or planned US60 roadway at the western and eastern limits of the study area. At those locations, the freeway system would operate at LOS E/D.

TSM/TDM Strategies (Freeway Management System)

Transportation System Management (TSM) strategies seek to maximize the existing roadway network efficiency without substantial physical improvements (such as a freeway alternative) to the transportation network. TSM improvements could include actions such as widening arterial streets, optimizing traffic signalization, and/or creating more bicycle facilities in the corridor. Transportation Demand Management (TDM) strategies are intended to reduce the use of single occupancy vehicles (SOV) on the roadway network. Strategies could include carpool/vanpool programs, telecommuting, staggering work hours, and development controls.



202L/US60 Traffic Interchange
TRACS No. 202L MA 028 H5686 01D
Project No. NH-202-B(ACG)

LEGEND

XXX - 2025 AM Peak Hour
XXX - 2025 PM Peak Hour
XXX - 2025 Average Daily Traffic
x (x) - 2025 AM (PM) Peak Hour

For freeway
related traffic

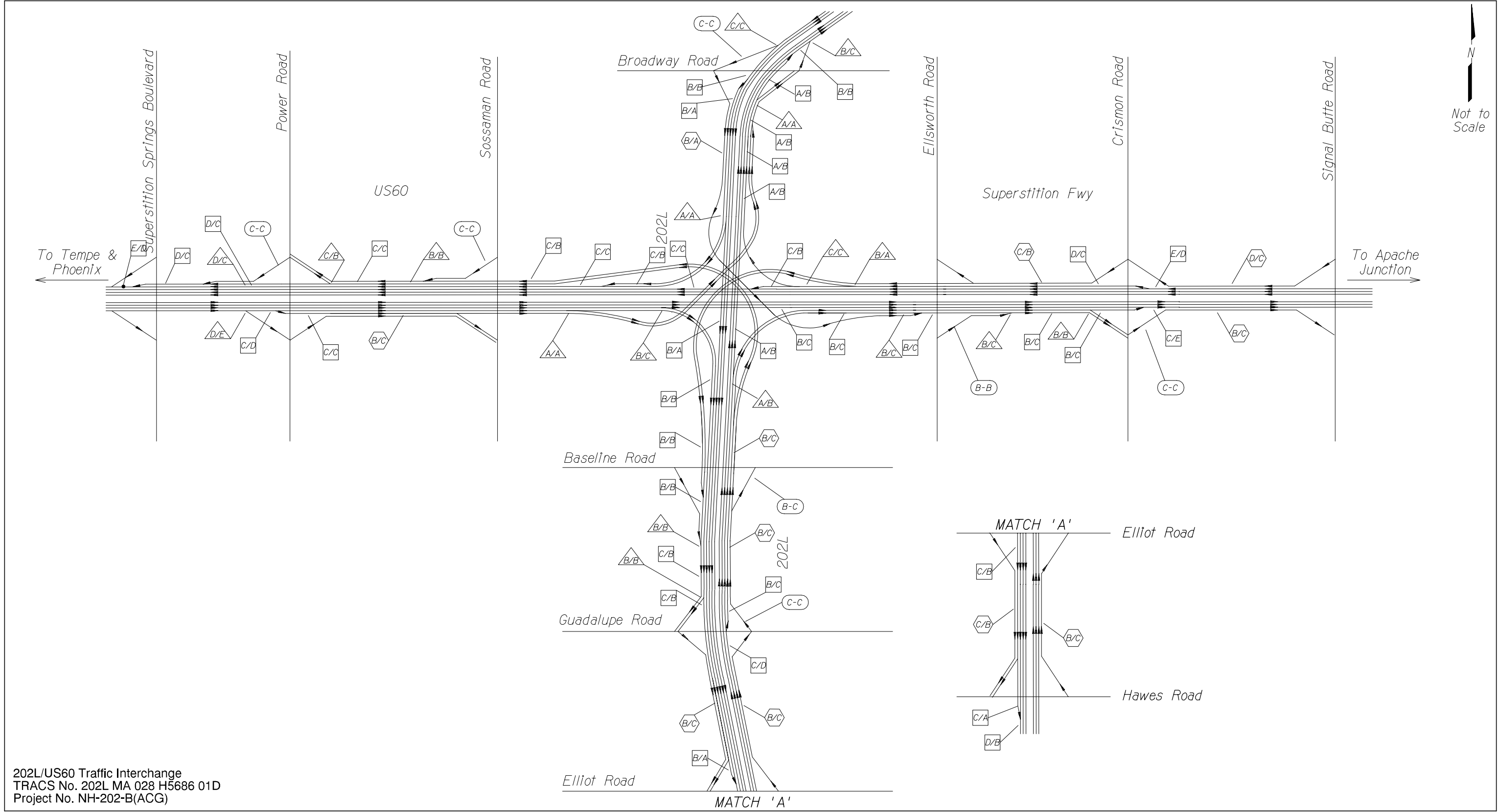
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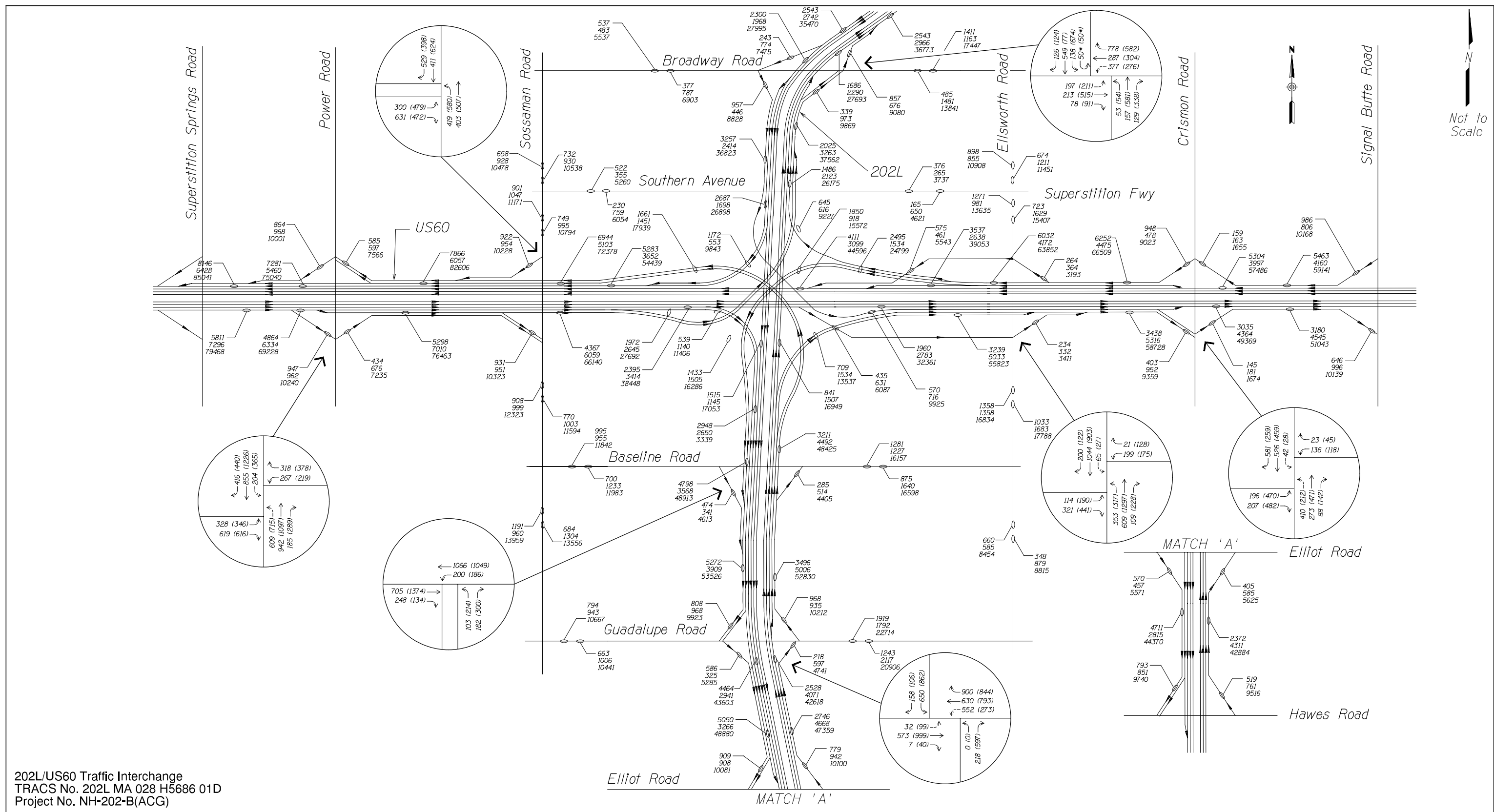
- Refer to Section II.E.2, for text regarding alternatives traffic operations.
- Each line depicts a single travel lane.
- Arrows indicate direction of traffic flow.
- Does not include HOV lanes.
- The circled traffic information shows the number of vehicles entering and leaving the freeway during a.m. and p.m. peak hour traffic.

2025 Traffic Volume, Alternative A

Figure 2-8

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LEGEND

XXX - 2025 AM Peak Hour
 XXX - 2025 PM Peak Hour
 XXX - 2025 Average Daily Traffic
 x (x) - 2025 AM (PM) Peak Hour

For freeway
 related traffic

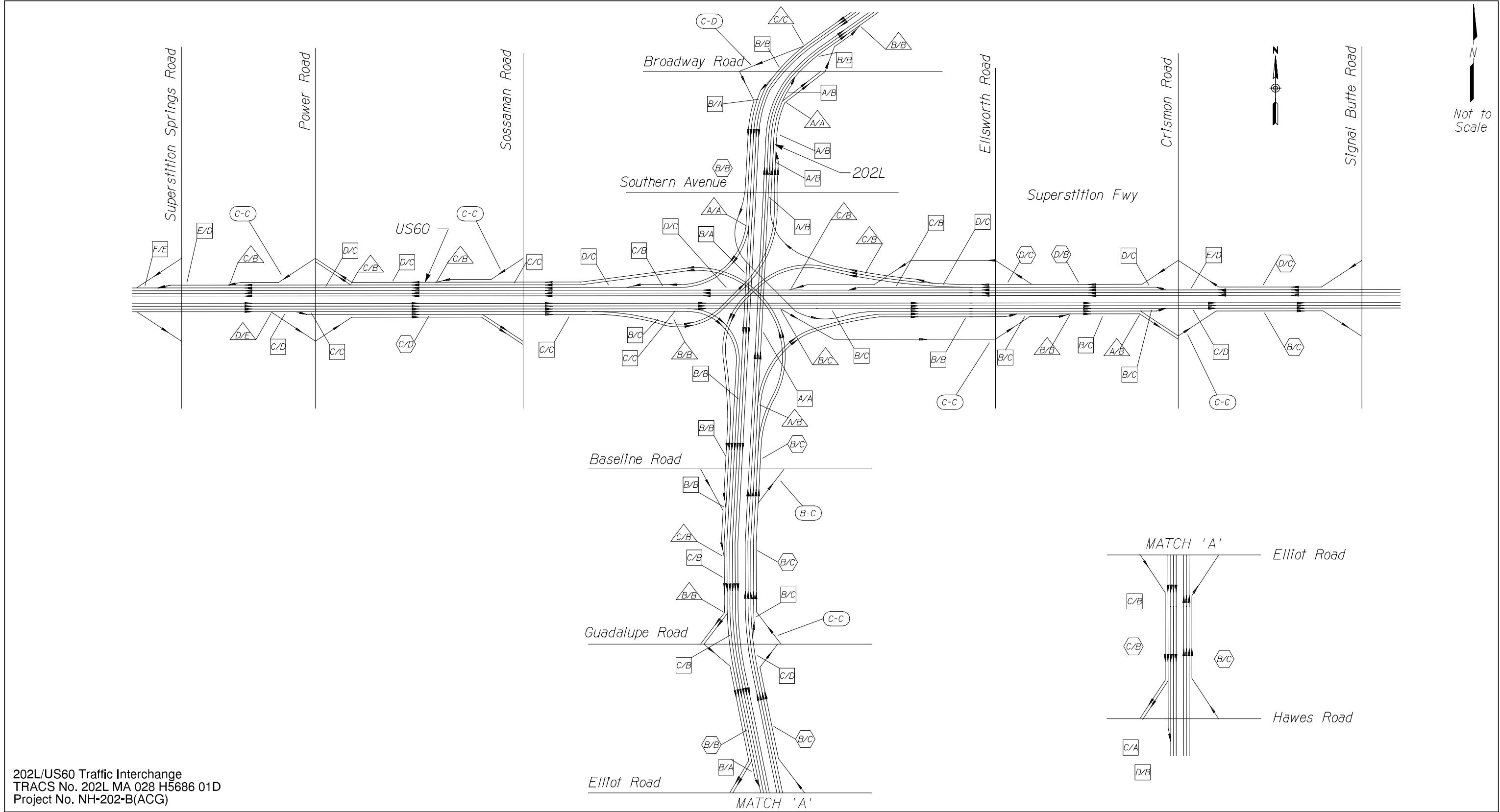
NOTES

- Refer to Section II for text regarding alternatives traffic operations.
- Each line depicts a single travel lane.
- Arrows indicate direction of traffic flows.
- Does not include HOV lanes.
- The circled traffic information shows the number of vehicles entering and leaving the freeway during a.m. and p.m. peak hour traffic.

2025 Traffic Volume, Alternative B

Figure 2-10

Page II-26



LEGEND

- Freeway Mainline Level Service (LOS)
- △ Ramp Merge/Diverge LOS
- Weaving LOS
- ⬡ Interchange LOS (AM-PM)

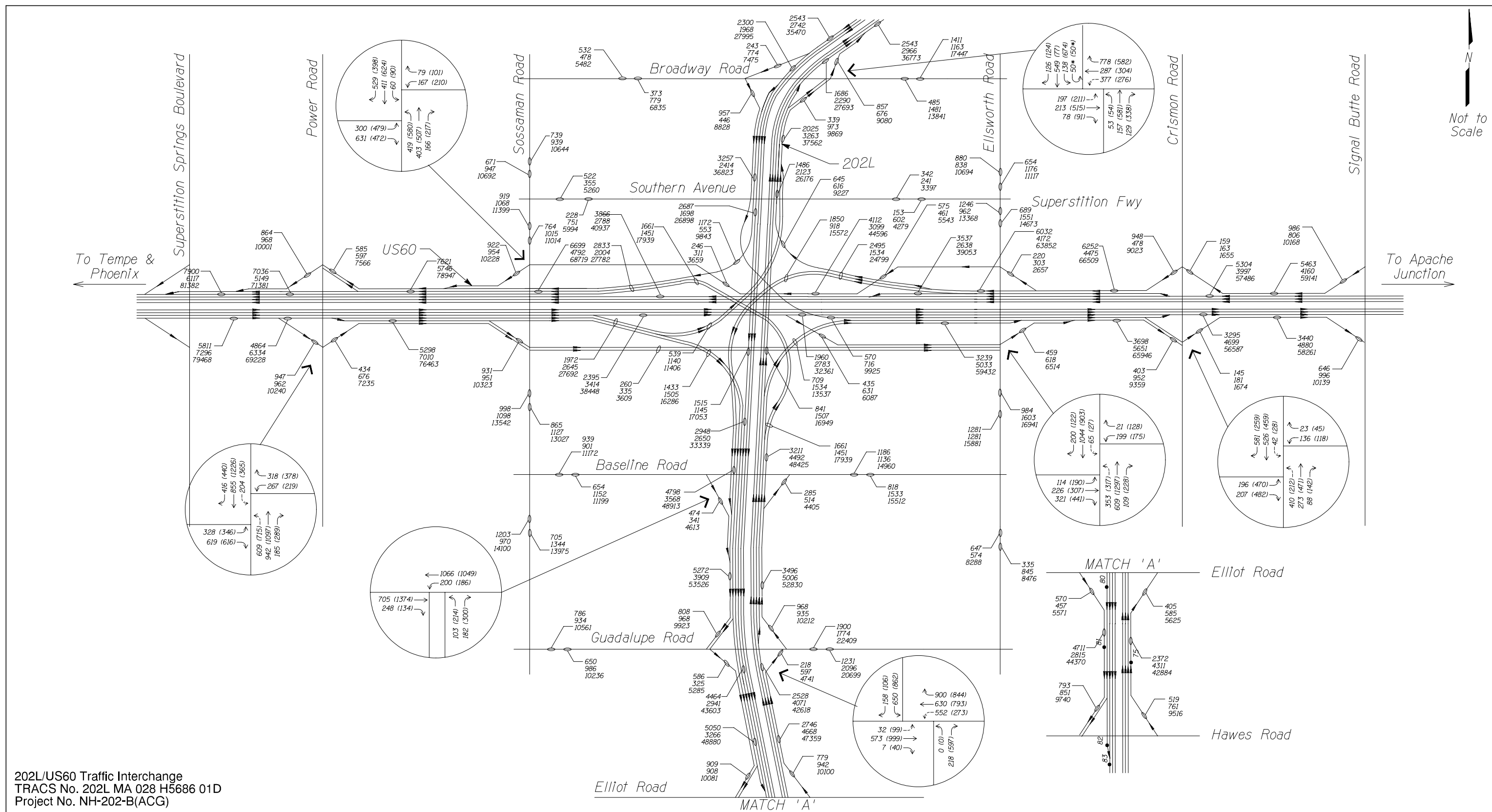
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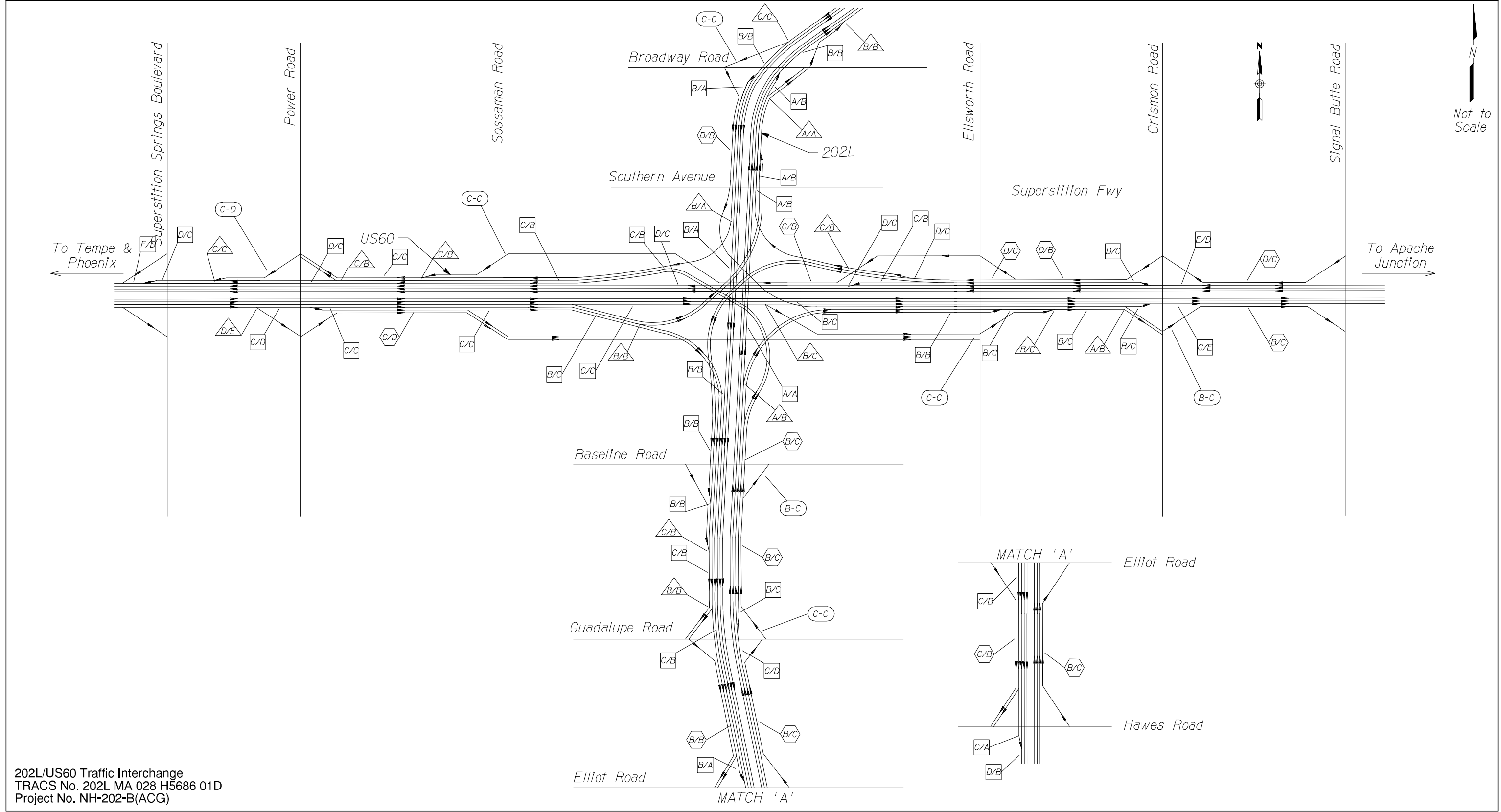
- Each line depicts a single travel lane.
- Arrows indicate direction of traffic flow.
- Does not include HOV lanes.

2025 Levels of Service Alternative B

Figure 2-11

Page II-27





Applicable elements of the ADOT freeway management system would be incorporated, where appropriate, into the design and operation of the action alternatives. These elements could include the following:

- ▶ ADOT, the City of Mesa, the Regional Public Transit Agency (RPTA), and MAG would work together during development of the project to create opportunities for developing park-and-ride lots and bicycle paths where right-of-way permits such opportunities. Intergovernmental agreements would be necessary to determine funding responsibilities.
- ▶ The adopted regional HOV lane policies would reserve the future seventh and eighth lanes in the 202L median for dedicated HOV lanes.
- ▶ ADOT would include ramp metering, at the service TIs ramps on the 202L and US60 to enhance operational characteristics on the freeway.

Right-of-Way Requirements

The typical right-of-way width is 600 feet for US60 from Power Road to Crismon Road. The limits of the US60 right-of-way are approximately 400 feet north and 200 feet south of the US60 median centerline.

The property within the 202L corridor between Broadway Road and Emelita Avenue has been acquired by ADOT. Other parcels are in various stages of the acquisition process for the 202L. The right-of-way acquisition process has been underway in the Crescent Run development and in the new developments between Baseline Road and Guadalupe Road. ADOT has coordinated with the developers of these communities to ensure adequate right-of-way is reserved for the freeway corridor. The action of acquiring properties for right-of-way in the study area does not preclude the selection of any of the alternatives being studied in detail. Table 2-7 lists right-of-way requirements for the action alternatives.

Table 2-7. Right-of-Way Requirements, All Action Alternatives

Right-of-Way Requirements in Acres ¹	No-Build Alternative	Action Alternatives		
		A	B	C
From Broadway Road to Southern Avenue	85.6	85.6	85.6	85.6
Between Southern Avenue and US60	68.2	68.8	68.8	70.2
Between US60 and Baseline Road	74.0	74.4	87.0	93.2
Between Baseline Road and Elliot Road	126.8	126.8	126.8	126.8
TOTAL	354.6	355.6	368.2	376.2
¹ Estimated areas are preliminary and are subject to change as design is refined. This property is currently held by ADOT or private ownership. Note: No-Build Alternative estimated areas are approximated.				

Traffic Control Devices and Illumination

Signing, lighting, traffic signals, and pavement marking would be designed to meet current guidelines referenced previously in the section, *Design Criteria*, and in accordance with the *Manual on Uniform Traffic Control Devices (USDOT 1988)*. Any freeway lighting that is installed would be designed to reduce illumination spillover on to sensitive light receptors (typically residential areas). During final design, ADOT would identify measures to reduce glare impacts on a case-by-case basis. Lighting needs would also include underdeck lighting on bridge structures. The City of Mesa's standards for traffic control devices and illumination at cross streets would be reviewed during final design.

Utilities

Table 2-8 shows the major existing public utilities within the US60 and planned 202L corridors.

The alternatives would require coordination with local companies regarding the relocation of utilities as appropriate. ADOT coordination with affected utilities would be on-going and would continue through the final design process. Utilities with prior rights would be relocated at ADOT cost per the requirements of the utility.

Table 2-8. Existing Utilities

Freeway/Cross Street	Existing Utilities
US60	
Recker Road	21-inch sewer, 24-inch sewer, 24-inch water, 4-inch gas, RWCD irrigation canal
Superstition Springs Boulevard	12-inch water
Power Road	24-inch sewer, 12-kilovolt (kV) overhead power
Clearview Avenue	30-inch sewer
Sossaman Road	4-inch gas, 20-inch water, underground telephone, CATV, 15-inch sewer
900 ft east of Sossaman Road	4-inch gas
1,200 ft east of Sossaman Road	Underground telephone
1,350 ft east of Sossaman Road	Underground power distribution
1,500 ft east of Sossaman Road	8-inch water
Lisa Road	24-inch sewer
Hawes Road	16-inch water, underground telephone, 8-inch gas, 42-inch effluent line
Ellsworth Road	16-inch water, 8-inch gas, 36-inch sewer, 36-inch water, underground telephone (including fiber optics), overhead power, underground power distribution, 24-inch effluent line
1,300 ft west of Ellsworth Road	Underground power distribution
2,100 ft east of Ellsworth Road	Underground power distribution
Crismon Road	Gas (size unknown), underground telephone, 16-inch effluent line, 16-inch water, overhead power, 16-inch sewer
1,400 ft. west of Crismon Road	Underground power distribution
¼ mile west of Signal Butte Road	Overhead power
202L	
Broadway Road	8-inch sewer, 12-inch water (2), 12-kV overhead power, underground telephone, CATV
Pueblo Street	8-inch sewer, 8-inch water, 4-inch water, 12kV overhead power, CATV
Southern Avenue	Sewer (size unknown) 18-inch sewer, 8-inch water, 16-inch water, water (size unknown), 12-kV/69kV overhead power, underground power distribution, underground telephone, CATV, 4-inch gas
North of US60	10-inch sewer
Baseline Road	2-inch gas, 8-inch water, 16-inch water, 30-inch sewer, underground telephone (including fiber optics), overhead power, underground power distribution
Medina Avenue	15-inch sewer, water (size unknown), 12kV overhead power
Guadalupe Road	4-inch water, underground power distribution, underground telephone, CATV, 4-inch gas, 10-inch sewer
Peralta Avenue	24-inch sewer, 500kV overhead power, 230/69kV overhead power, underground power distribution, underground telephone
Elliot Road	10-inch sewer forcemain, 16-inch water
Warner Road	69 kV overhead power (future), 12 kV overhead power, underground telephone, CATV

Earthwork

Table 2-9 summarizes earthwork quantities for each action alternative.

Table 2-9. Estimated Earthwork Quantities, All Action Alternatives

Earthwork Quantities ¹	No-Build Alternative	Action Alternative		
		A	B	C
Excavation	2,400,000	2,432,000	2,467,000	2,582,000
Fill	3,400,000	3,573,000	3,942,000	4,072,000
Difference	1,000,000	1,141,000	1,475,000	1,490,000
1. Estimated quantities (in cy) are preliminary and subject to change as the design is refined.				
Note: Earthwork quantities for the No-Build Alternative are approximated.				

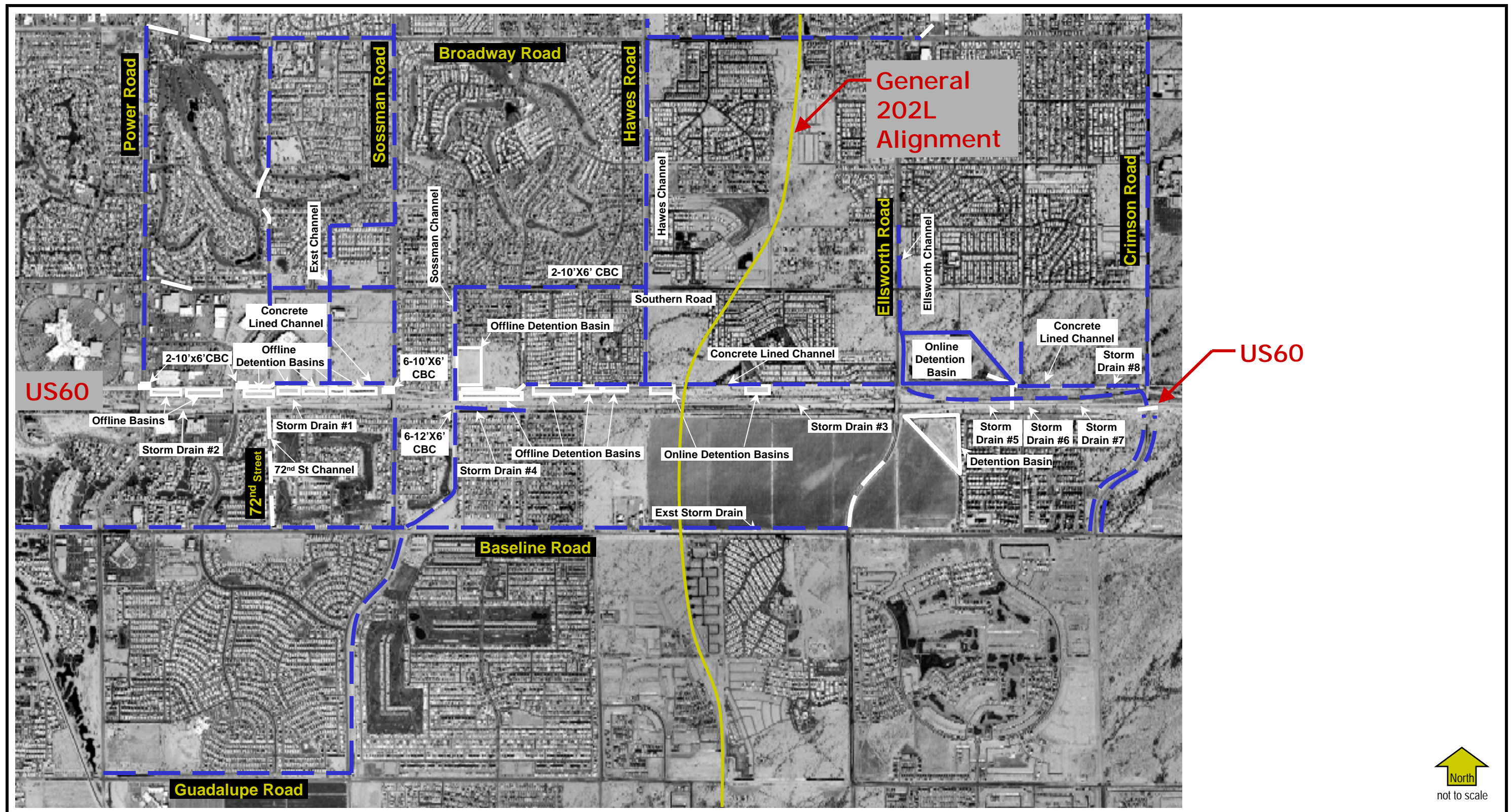
Drainage

Drainage in the study area involves a system of drainage channels, floodways, and stormdrains (Figure 2-14). The system is operated and maintained by ADOT, Maricopa County Flood Control District (MCFCD), and the City of Mesa.

New and/or reconstructed drainage structures would be designed to meet current standards referenced in *A Policy on Geometric Design of Highways and Streets (AASHTO 1994)*, *ADOT Standard Specifications for Road and Bridge Construction (ADOT 1996)*, *Roadway Design Guidelines (ADOT 2000c)*, and the City of Mesa’s design guidelines. Coordination would continue with the MCFCD, the City of Mesa, and the local flood control district regarding drainage improvements in the project limits. Drainage features for cross streets would be designed to City of Mesa standards, in coordination with City of Mesa staff, at the time of design.

Preliminary Construction Costs

Table 2-10 provides a breakdown of the preliminary estimated construction costs for each of the action alternatives. Preliminary costs do not consider final design and right-of-way acquisition, and are subject to change as design is refined.



Existing Drainage Features

Figure 2-14

Table 2-10. Preliminary Construction Costs

	Action Alternative		
	A	B	C
Preliminary Construction Costs	\$184,400,000	\$189,320,000	\$206,220,000
Note: The estimated cost for the No-Build Alternative is \$85,000,000 (ADOT 1999a). This estimate excluded improvements north of Southern Avenue, south of Baseline Road, west of Power Road, and east of Ellsworth Road.			

202L/US60 Traffic Interchange Construction Sequencing

Construction as currently planned would follow the sequencing concept plan summarized in Table 2-11 and illustrated in Figures 2-15, 2-16, and 2-17.

Table 2-11. Construction Sequencing

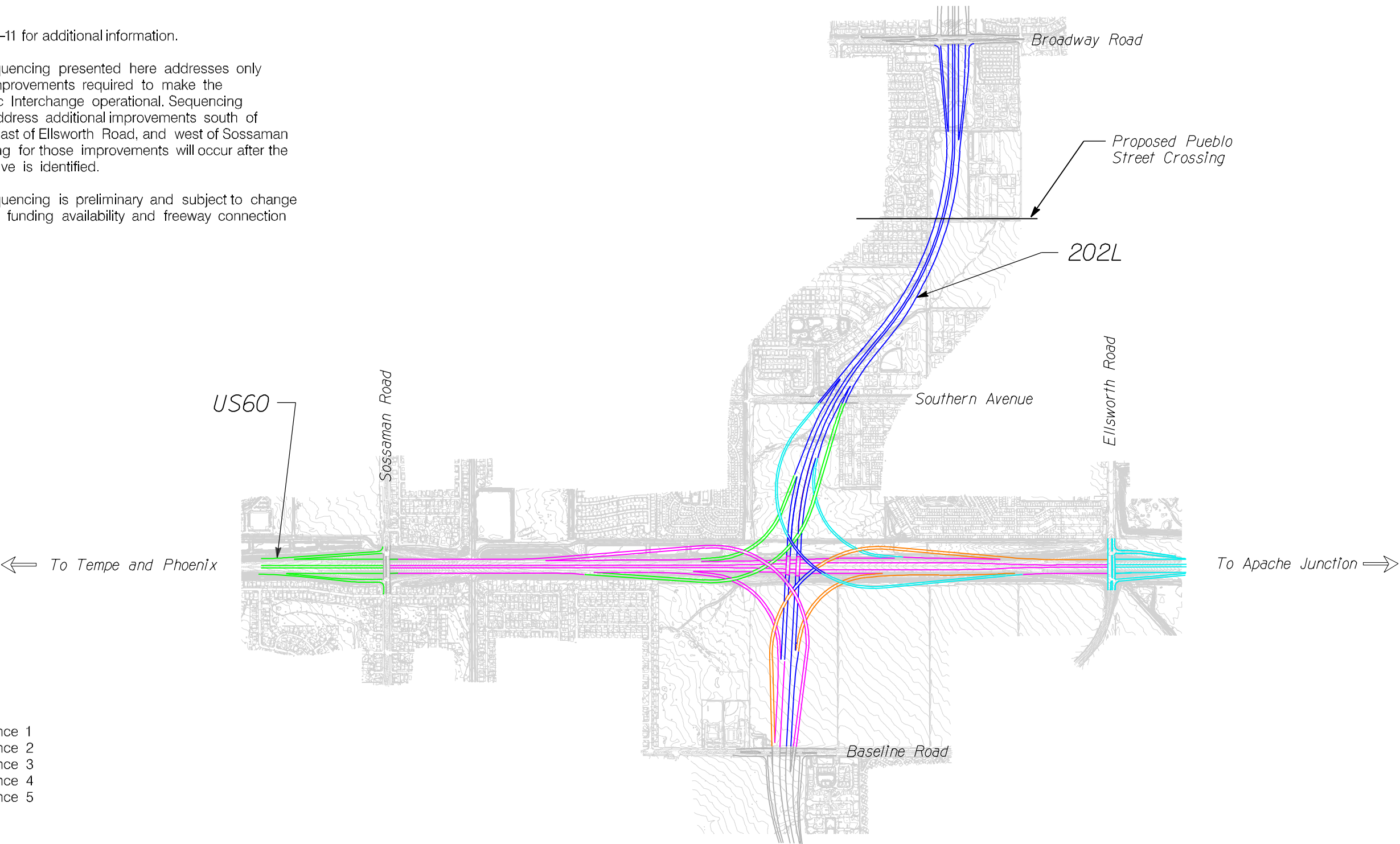
Construction Sequence	Activity
Sequence 1	<ul style="list-style-type: none"> ▶ Reconstruct US60 between Sossaman Road and Ellsworth Road ▶ Provide the directional ramp connections between the 202L (south of US60) and the US60 (west of 202L)
Sequence 2	<ul style="list-style-type: none"> ▶ Complete the 202L from Broadway Road to Baseline Road
Sequence 3	<ul style="list-style-type: none"> ▶ Complete the two directional ramps to connect the 202L (south of US60) with the east leg of the TI ▶ Complete the US60/Ellsworth Road TI
Sequence 4	<ul style="list-style-type: none"> ▶ Complete the two directional ramps to connect the 202L (north of US60) with the west leg of the 202L/US60 TI
Sequence 5	<ul style="list-style-type: none"> ▶ Complete the two directional ramps to connect the 202L (north of US60) with the east leg of the 202L/US60 TI. ▶ Complete the ultimate US60 improvements necessary to accommodate the directional ramps

Construction Sequences 1 and 2 would be implemented to follow the logical sequence of construction necessary to build the TI. Upon completion of Sequence 2, the sequence of the final construction stages would be adjusted to conform to available funding and freeway connection priorities. Final construction phasing plans would be prepared during final design.

Traffic Control

Traffic would be managed by detailed traffic control plans adhering to the procedures and guidelines specified in the *Arizona Department of Transportation Traffic Control Manual* for

- Notes:
- Refer to Table 2-11 for additional information.
 - Construction sequencing presented here addresses only those physical improvements required to make the 202L/US60 Traffic Interchange operational. Sequencing here does not address additional improvements south of Baseline Road, east of Ellsworth Road, and west of Sossaman Road. Sequencing for those improvements will occur after the selected alternative is identified.
 - Construction sequencing is preliminary and subject to change to conform with funding availability and freeway connection priorities.

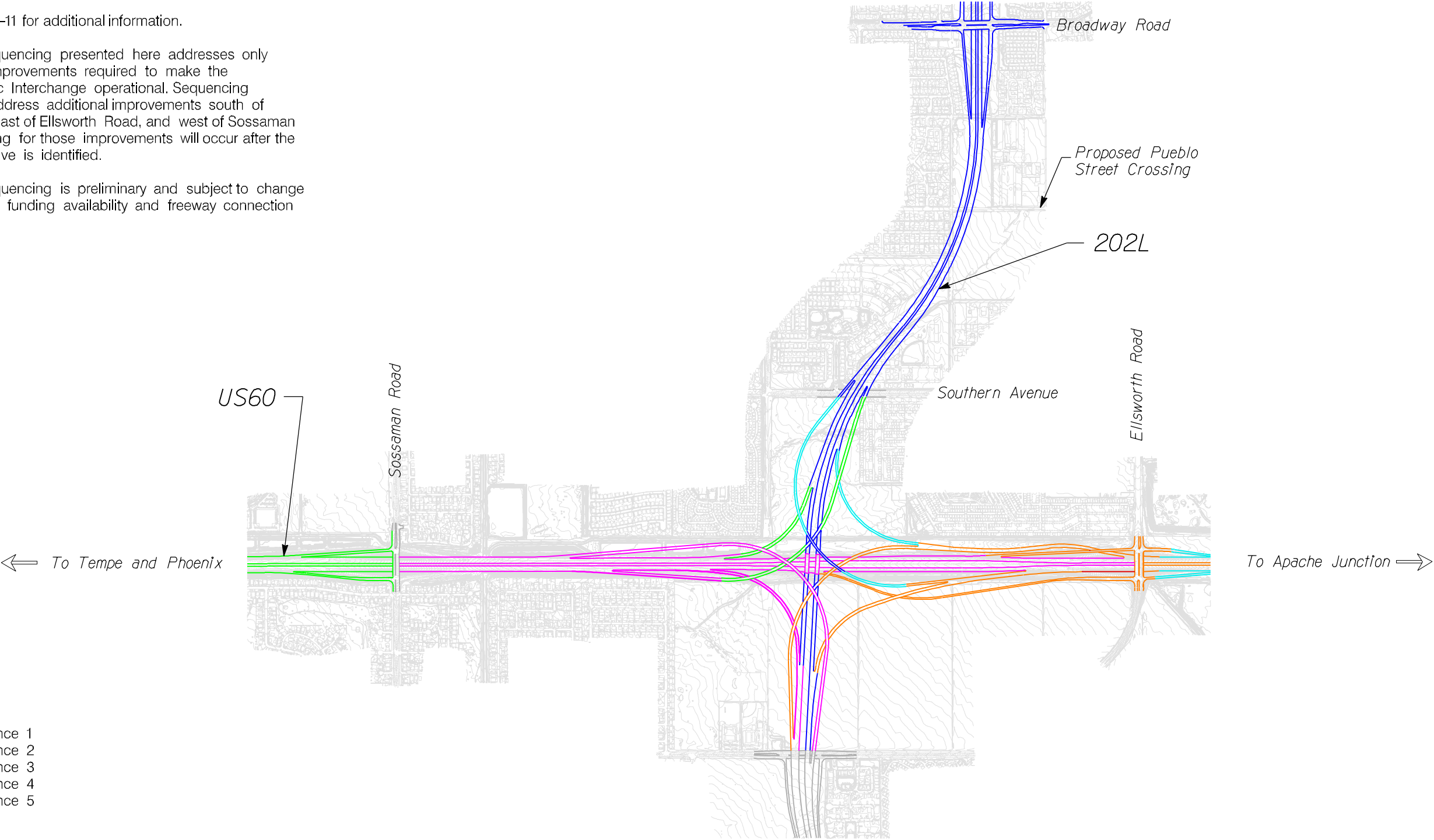


- Legend:
- Sequence 1
 - Sequence 2
 - Sequence 3
 - Sequence 4
 - Sequence 5

Construction Sequencing Concept - Alternative A

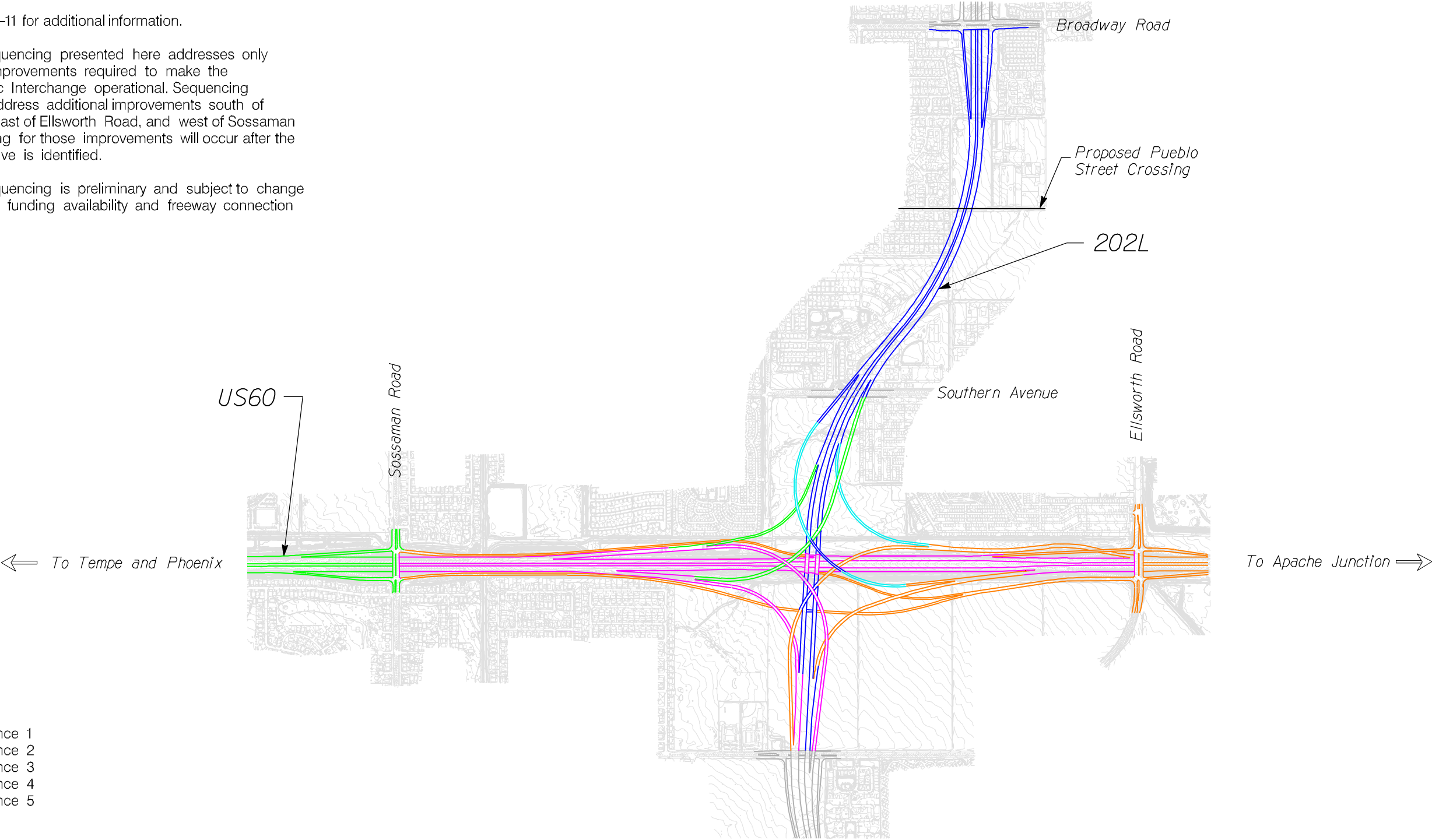
Notes:

- Refer to Table 2-11 for additional information.
- Construction sequencing presented here addresses only those physical improvements required to make the 202L/US60 Traffic Interchange operational. Sequencing here does not address additional improvements south of Baseline Road, east of Ellsworth Road, and west of Sossaman Road. Sequencing for those improvements will occur after the selected alternative is identified.
- Construction sequencing is preliminary and subject to change to conform with funding availability and freeway connection priorities.



Notes:

- Refer to Table 2-11 for additional information.
- Construction sequencing presented here addresses only those physical improvements required to make the 202L/US60 Traffic Interchange operational. Sequencing here does not address additional improvements south of Baseline Road, east of Ellsworth Road, and west of Sossaman Road. Sequencing for those improvements will occur after the selected alternative is identified.
- Construction sequencing is preliminary and subject to change to conform with funding availability and freeway connection priorities.



Highway Construction and Maintenance (ADOT 1989b) and the *Manual for Uniform Traffic Control Devices (USDOT 1988)*.

Access to existing properties would be maintained at all times. The final traffic control plans would be prepared during final design.

Enhancement Opportunities

Construction of any of the action alternatives would include appropriate landscaping to enhance aesthetics and to buffer visual impacts on adjoining properties. Aesthetic treatments of required noise barriers would be considered during final design. The City of Mesa, the RPTA, and MAG would work together during the design of the selected alternative to create opportunities for the development of park-and-ride lots and bicycle paths where right-of-way allows such opportunities.

Pueblo Street Crossing, 88th Street Realignment, Southern Avenue and Warner Road Crossings

A potential grade separation crossing over the 202L is considered at Pueblo Street. The City of Mesa and Maricopa County Department of Transportation (MCDOT) requested the inclusion of a grade separation crossing at Pueblo Street. ADOT has agreed to include this improvement in the action alternatives, with the provision that the local jurisdiction would procure the funding necessary for this bridge crossing. The 202L profile has been designed to allow for the Pueblo Street grade separation.

The Pueblo Street underpass would provide local street continuity across the 202L to allow the neighborhoods west of the freeway to access the elementary and high schools east of the freeway. Pueblo Street would continue to function as a bike route in accordance with the *City of Mesa Transportation Plan (City of Mesa 2001)*.

Along the west 202L right-of-way, 88th Street would be realigned between Pueblo Street and Emelita Avenue (Figures 2-2, 2-3, 2-4). The 202L would pass over Southern Avenue and Warner Road with grade-separated crossings.

F. IDENTIFICATION OF THE PREFERRED ALTERNATIVE

Alternative B has been recommended as the preferred alternative. In making this recommendation, ADOT considered several factors as outlined below.

A 15-member Citizens Advisory Team (CAT) was established, with representatives of each of the communities in the immediate vicinity of the project. When the group was formed, members

were asked to communicate with citizens in their respective communities, and to advise ADOT on how best to communicate with the residents in the area. They were also asked to provide feedback regarding the technical and environmental issues associated with the alternatives developed and evaluated with this project. The group met monthly throughout the project period and developed an understanding of the goals of the environmental assessment process, public policy, and the complexities of traffic interchange design.

After several months of meetings, presentations, and consideration, the CAT met to develop a team consensus on a single alternative to recommend to ADOT. In May 2001 the team determined the priorities that they believed should be used in making a final decision. The factors selected to base the team's final evaluation on included ability to construct in a timely manner, noise mitigation, visual impacts, public acceptance, impact on adjacent communities, safety, access, and affordability.

On June 27, 2001, the CAT reached a consensus decision to recommend Alternative B as the preferred alternative. Using a computer-assisted decision-making process, Alternative B scored highest based on the chosen factors. Although Alternative B was not the unanimous preference of the team, it was the group's consensus and recommendation for implementation.

The three action alternatives were presented to the City of Mesa Transportation Committee on July 13, 2001. An overall summary of each alternative was presented, along with the potential advantages and disadvantages of each alternative. City of Mesa staff recommended Alternative B as the preferred alternative. Although a formal recommendation was not requested from the Transportation Committee, the Transportation Committee indicated a willingness to support Alternative B if selected as the preferred alternative.

The action alternatives were presented to the MAG Transportation Committee on July 24, 2001. On August 8, 2001, representatives of ADOT, MAG, and the FHWA met to recommend the preferred alternative for the project. Roadway geometric design, traffic operational characteristics, local access to US60, traffic redistribution to the local arterial street system, right-of-way impacts, environmental impacts, and estimated construction cost were the criteria used for the selection process. CAT and City of Mesa recommendations for selection of Alternative B as the preferred alternative were seriously considered in the ADOT selection process. Based on this information, the decision was made to recommend Alternative B as the preferred alternative.